TECHNOLOGY DEPT.

JUNE, 1950

Flow

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MAY 29 1950
DETROIT

OF MATERIALS THROUGH PROPER HANDLING AND PACKAGING METHODS

THIS ISSUE
Chain Slings
Studded Canvas Belting
Containers

NOELTING

Faultless

engineered

CASTERS for INDUSTRY

DOUBLE BALL BEARING SWIVEL CASTERS
RIGID PLATE CASTERS
FAULTLESS
A COMPLETE SELECTION OF ENGINEERED CASTERS DESIGNED FOR EVERY TYPE OF DUTY
VULCANIZED RUBBER TREAD CASTERS
THREAD GUARDS FOR TEXTILE TRADES
NOELTING FAULTLESS
V-GROOVED WHEELS FOR ANGLE IRON TRACKS

Save costs 3 ways!

1. **PRODUCTION:** Higher production costs demand new *short cuts* . . . from receiving to shipping platforms. Faultless Casters speed up the *flow of materials.*
2. **MAN-HOURS:** Cutting handling time, *accounting for over 20% of industry's man-hours,* provides your greatest opportunity for gains in worker productivity—unit output.
3. **FLOORS:** No need for costly floor alterations or floor covering—Faultless wheels are available for all types of floor surfaces and loads.

For further particulars, write for Catalog 156 or let our nearest sales-engineer submit suggestions for handling *your* caster problem, no obligation.

FAULTLESS CASTER CORPORATION
DEPT. F-6, EVANSVILLE 7, IND.
Branches in Atlanta, Boston, Chicago, Dallas, Detroit, High Point, [illegible]

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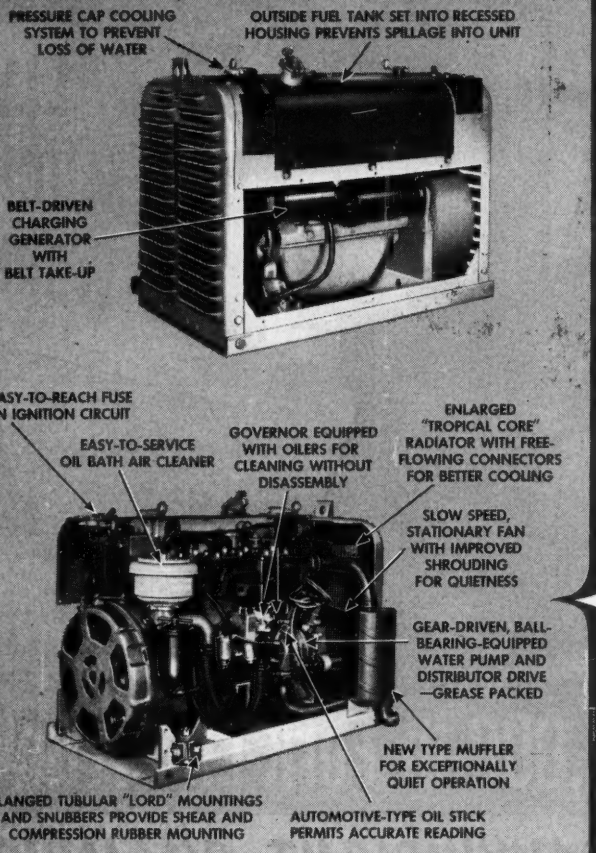
PRESSURE CAP COOLING SYSTEM TO PREVENT LOSS OF WATER
OUTSIDE FUEL TANK SET INTO RECESSED HOUSING PREVENTS SPILLAGE INTO UNIT
BELT-DRIVEN CHARGING GENERATOR WITH BELT TAKE-UP
EASY-TO-REACH FUSE IN IGNITION CIRCUIT
EASY-TO-SERVICE OIL BATH AIR CLEANER
GOVERNOR EQUIPPED WITH OILERS FOR CLEANING WITHOUT DISASSEMBLY
ENLARGED "TROPICAL CORE" RADIATOR WITH FREE-FLOWING CONNECTORS FOR BETTER COOLING
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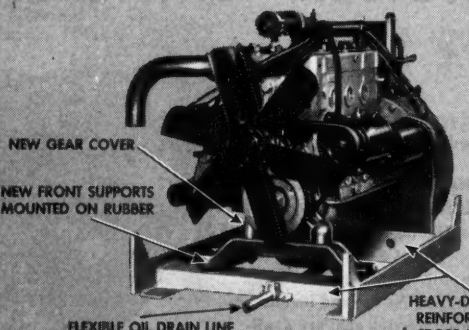
GEAR-DRIVEN, BALL-BEARING-EQUIPPED WATER PUMP AND DISTRIBUTOR DRIVE —GREASE PACKED
NEW TYPE MUFFLER FOR EXCEPTIONALLY QUIET OPERATION
FLANGED TUBULAR "LORD" MOUNTINGS AND SNUBBERS PROVIDE SHEAR AND COMPRESSION RUBBER MOUNTING
AUTOMOTIVE-TYPE OIL STICK PERMITS ACCURATE READING


NEW GEAR COVER
NEW FRONT SUPPORTS MOUNTED ON RUBBER
FLEXIBLE OIL DRAIN LINE
HEAVY-DUTY FRAME REINFORCED WITH CROSS CHANNELS, FRONT AND REAR

Announcing

The NEW READY-POWER

GENERAL PURPOSE

MODEL H-A

GAS ELECTRIC POWER UNIT FOR ELECTRIC INDUSTRIAL TRUCK OPERATION

"Making a good unit better" was the theme in the development of the finest, most modern Ready-Power Unit ever presented. Refinement features pointed towards important new advantages: remarkably quiet operation; less maintenance; ease of adjustment and complete accessibility. These add up to even longer life and lower operating costs than previous Ready-Power models offered. The new Ready-Power Model H-A has been work-tested and proven under the toughest of conditions. It is designed to replace existing Ready-Power Model "H" units and older models commonly used on Electric Trucks of the following capacities: 4,000 lb. Fork, 6,000 lb. Crane and up to 10,000 lb. Platform.

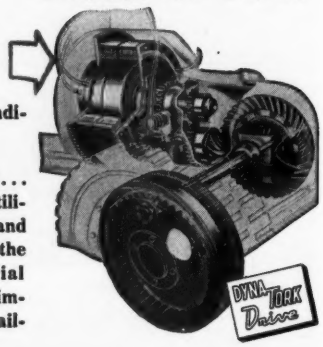
The READY-POWER Co.
3838 Grand River Ave., Detroit, Mich.

Write for Complete Information

READY-POWER

The UTILITRUC 10,000-lb Fork-Lift Truck

—CLARK'S NEW HEAVYWEIGHT CHAMPION WITH DYNATORK DRIVE



Clark announces the Utilitruc-100 — a 10,000-pound-capacity gasoline-powered fork-lift truck added to its steadily-growing line of materials-handling machines and attachments.

INCREASED WORK CAPACITY . . . In a neutral competitive test, this versatile giant performed 20 per cent more work than conventional-drive machines of equal capacity . . . mainly because of its Dynatork Drive, which utilizes power more efficiently and eliminates waste motion. The Dynatork Drive transmits engine power to the wheels through a magnetic field, across an air gap—no friction clutch, no conventional transmission.

EASY TO HANDLE . . . Compactness, short turning radius, easy steering and absolutely smooth travel contribute to its unequalled efficiency, and virtually eliminate driver fatigue.

REDUCED MAINTENANCE . . . Elimination of many working parts including major points of wear cuts sharply the time and costs of maintenance and service.

WHERE TO USE IT . . . In steel mills and warehouses; in other metals-handling operations; in body-building plants, building supply yards and other installations where loads are heavy and difficult to handle. Usefulness to the stevedoring industry also is indicated.

WHAT TO DO ABOUT IT . . . Full information about Utilitruc-100 is worth getting and easy to get—simply use the coupon. Clark's Material Handling News, and its stimulating movies also are available upon request.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 13, MICH.
Please send: ☐ UTILITRUC-100 Literature ☐ Movie Digest ☐ Material Handling News

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AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

Flow

FLOW is not the official publication of any group, society or other special interest and consequently its editorial pages are unbiased and undominated.

VOL. 5, NO. 9 • JUNE, 1950

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IRVING B. HEXTER, Pres.
LESTER P. AURBACH, V. Pres.

All communications should be addressed to FLOW Magazine, 1240 Ontario Street, Cleveland 13, Ohio.

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United States and possessions—$3.00 per year, $5.00 for 2 years, $6.50 for 3 years.

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Tough all the way through

This baby is all muscle — resilient, highly wear-resistant rubber right down to the rim. Mono-Cushions are built with plenty of beef, designed with just one thing in mind: To knock a big chunk off your tire costs.

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No cushion tire does a better job of soaking up bumps and jolts than Mono-Cushion. Rubber especially compounded for resilience plus contour designed for maximum shock absorption does the trick.

THE NEW MONARCH INDUSTRIAL CUSHION TIRE

Adds up...

. . . to an easy ride for drivers, less breakage in loads, less vehicle maintenance, lower tire costs.

The leading manufacturers of industrial trucks use Mono-Cushions as original equipment. Replacements available from the manufacturer of your equipment or his service branches.

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SPECIALISTS IN INDUSTRIAL SOLID TIRES

TRUSCON
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TRUSCON STEEL BOXES

just say "*Truscon*"...

Type PB-120 Truscon Steel Box and Platform
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System and neatness are synonymous with the use of Truscon Steel Boxes and Skids.

and there's the *box* you need!

Truscon has scores of different types of steel boxes and skids to meet a wide range of materials handling requirements. And if your needs are something special, Truscon has the engineering ability to tailor-make the exact units you require. Truscon's long experience in steel box and skid design . . . Truscon's highly efficient facilities for production and service . . . Truscon's long association with box users in every branch of materials handling . . . these are *plus* features that make your dollar investment in Truscon Steel Boxes and Skids so much more profitable. Write for catalog showing wide range of Truscon Boxes available, and ask for an experienced Truscon man to help plan your needs efficiently.

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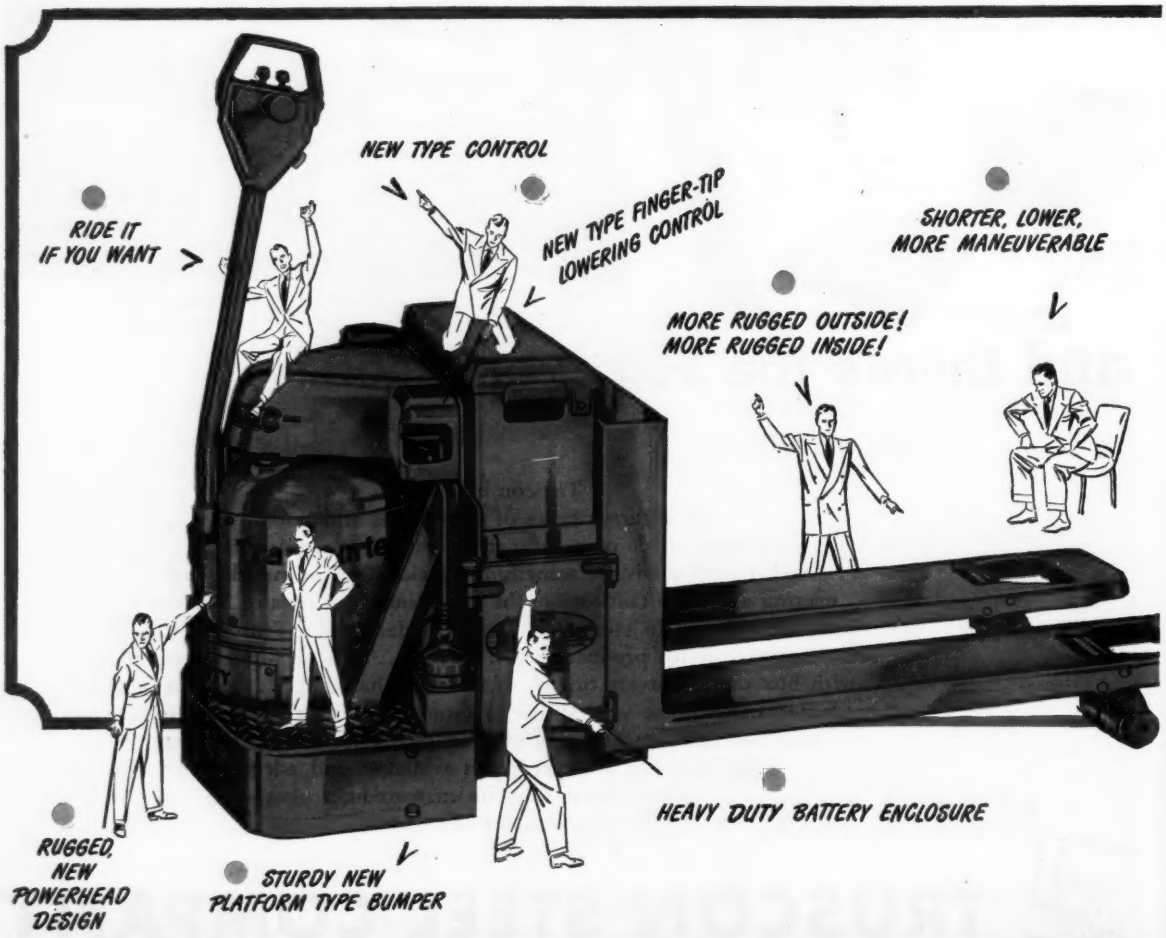
NEW RUGGED

Famous Service-Proved Electric Truck That's Saving Industry Millions in Handling Costs

ADDS ALL-NEW DESIGN AND PERFORMANCE FEATURES TO SAVE YOU MORE MONEY!


NEW TYPE CONTROL
RIDE IT IF YOU WANT
NEW TYPE FINGER-TIP LOWERING CONTROL
SHORTER, LOWER, MORE MANEUVERABLE
MORE RUGGED OUTSIDE! MORE RUGGED INSIDE!
HEAVY DUTY BATTERY ENCLOSURE
RUGGED, NEW POWERHEAD DESIGN
STURDY NEW PLATFORM TYPE BUMPER

LOOK TO THE LEADER FOR ALL THAT'S NEW!

"101" TRANSPORTER

SHORTER, COMPACT, MORE MANEUVERABLE!

More rugged on the *outside,* more rugged on the *inside* . . . now the *New* "101" Transporter is even *more efficient* than the famous service-tested electric truck that's saving industry millions of dollars.

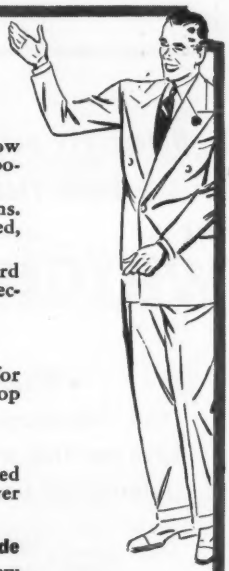
Its *all-new* features mean for you, better performance, less maintenance, lower operating costs . . . *extra savings* in smooth, trouble-free handling never before possible in a similar truck.

With pallet model almost one foot shorter, and control handle operating *both speeds,* low and high, forward and reverse from *any* position, including *vertical,* you get increased maneuverability in tighter spaces, narrower aisles.

Look over the new features highlighted on these pages. They represent advances that mean real money savings to you. In ability to lift, move and deposit up to 6,000 pound loads, "101" Transporter conserves energy, banishes back-breaking fatigue, is truly a worker's "dream come true" . . . management's answer to biggest savings at least cost.

Mail the coupon . . . and we will send you full particulars about the new features of "101" Transporter and how they can be depended on to slice plenty off the 36% material handling cost that goes into every production dollar spent.

Only "101" Transporter *Has Them All*



1. Rugged New Powerhead Design

Completely new cast drive housing for greater protection of all operating parts.

- **a** Easily and quickly accessible for maintenance and adjustment.
- **b** Final reduction fully enclosed gear drive.
- **c** Brand new field tested motor, specially designed by Automatic engineers with 20% increased efficiency.
- **d** Streamlined cast metal collector ring cover bolted securely to frame.

2. Shorter, Lower, More Maneuverable

Pallet type trucks are approximately a foot shorter and the platform trucks are 5½" shorter.

Increased maneuverability in tighter spaces, narrower aisles. All Transporters turn in their own length.

New design affords better weight distribution, by increasing weight on drive wheel and decreasing weight on load wheels, with little increase in truck weight.

Lower center of gravity gives more stability.

3. Sturdy New Platform Type Bumper

Deep sectioned heavy duty platform type bumper with non-skid plate.

4. New Type Control

- **a** Control handle operates both speeds, low and high, forward and reverse, from any position including vertical.
- **b** Two speed, forward and reverse buttons. Buttons are depressed ½ way for low speed, fully depressed for high speed.
- **c** Improved safety handle. Broader hand guard and new flanges on grip for positive protection of hand and fingers.

5. Heavy New Battery Enclosure

New enclosure completely encases battery for greater protection, has hinged doors and drop open lock for easy, quick battery changes.

6. New Type Finger-Tip Lowering Control

Smooth, positive action. Operator controls speed of lowering action with touch of his finger. Lever enclosed for protection.

7. More Rugged Outside—More Rugged Inside

In design, engineering and construction, the new "101" Transporter has an overall ruggedness that pays off in hard usage, long service, minimum parts replacement.

"101" Transporter
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

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Let us send you a really revealing booklet: *"How to Make Your Material Handling Pay Dividends."* It shows how you can cut your handling costs 50% to 75% . . . and with it, you get complete information on the *New* "101" Transporter features. Mail coupon.

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City.....Zone.....State.....

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FOR THE RUGGED JOBS . . .

THE
WRIGHT SAFEWAY

• When you get a hoist that's engineered for tough, constant, capacity service—you have one that will give you more years of average intermittent use, without expensive maintenance.

This hoist is built of steel throughout. Steel load chain is heat-treated, proof-tested, wick-lubricated.

That's what WRIGHT offers you today in the new, light weight WRIGHT **Safeway.**

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AMERICAN CHAIN & CABLE

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HOISTS TROLLEYS CRANES

Thermoid Ruff-Top Conveyor Belting "Floats" Packages On 35-Degree Incline!

Save time—save money—save labor. Specify Thermoid Ruff-Top Belting

Thousands of small, rough, irregularly-shaped points of soft rubber handle packages or cartons with full gripping power . . . *up or down inclines as much as 35 degrees.* Light packages literally "float" on the soft surface that allows the gripping action of the belt to take maximum effect.

Whatever your belting problems, you can count on Thermoid's continuing research and product development for uniform top quality in all types of conveyor belting. To insure long life and low maintenance cost, specify Thermoid Conveyor Belts when you buy conveyor systems.

For replacement belting your Thermoid distributor carries a full stock of Thermoid Belting to meet your requirements. If you have an unusual application, your Thermoid distributor can call on the Thermoid field representative whose broad experience in *all* fields of industry equip him to help you select the right Thermoid belt for your job.

For greater economy, longer service life and larger load capacity, specify Thermoid.

It will pay you to *Specify* Thermoid

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

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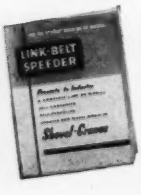
HANDLING is MUCH EASIER with this LINK-BELT SPEEDER on wheels!

The UC-55 is a one-man operated, self-propelled wheel-mounted Shovel-Crane — fast, mobile, maneuverable in the extreme, and applicable to numerous material handling jobs.

The number and kinds of handling jobs you can do with a wheel-mounted Link-Belt Speeder are remarkable! It goes anywhere inside or outside of plant buildings, over rough or smooth ground — even railroad tracks — and lifts, stacks, loads, unloads practically any type of material. Many plants find it useful in maintenance work, and in assembly of machines, and use it as a production tool as well as a conveyor of materials.

Fitted with crane and dragline or with conventional shovel, the UC-55 handles any loose material such as coal, gravel, sand, etc., at low unit cost.



Send for illustrated 16-page book showing full line and wide variety of industrial uses for Link-Belt Speeder Shovel-Cranes.

11,796

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS IOWA

Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES

To FLOW:

Data for Salesmen

We are attaching hereto our check in payment of extra copies of FLOW Magazine which we requested. We are particularly interested in the article entitled "Multiwall Bags Loaded by Fork Truck," the data and photos for which were furnished by the Clark-Hopkins Equipment Corporation of Philadelphia. It is our intention to bulletin this out to our salesmen.—K. F. Rupp, Assistant Treasurer, The Raymond Bag Co., Middletown, Ohio.

To FLOW:

Pneumatic Handling

The writer has for some time been interested in some form of material handling equipment suitable for unloading bulk material from box cars. This operation is desirable to do without means of a ramp to accommodate motive type equipment.

I have been a reader of your magazine for some time but have not found anything in your magazine which I believe at the moment will be satisfactory for such an operation. If you have anything in your files which you believe can be used, I would appreciate any information you may have.—Foster C. Koehn, Plant Engineer, The Falk Corp., Milwaukee, Wis.

Apparently Reader Koehn has reference to pneumatic handling systems. Recent articles on such operations were featured in FLOW for February (page 40) and April (page 38).—Ed.

To FLOW:

Articles Are Indexed

Please send me any indexes of FLOW articles that are available. —J. Wm. Kerpelman, Industrial Engineer, The Hecht Co., Washington, D.C.

The last two indexes in FLOW appeared in the following two is-

How to cut industrial tire costs!
Goodyear's complete line of industrial tires assures the right type and size for each job—means longer tire life, lower costs for you. That's why *it pays* to buy and specify Goodyear Industrial Tires.
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To help solve your industrial tire problems, Goodyear maintains a staff of technical experts. Write: Industrial Tire Division, Akron 16, Ohio.
GOODYEAR
INDUSTRIAL TIRES

ALVEY *conveyors*

save production dollars

Industry executives are increasingly conscious of rising costs that affect the profit picture. Long exposure to wasteful, obsolete package handling methods raises production costs unnecessarily. Everytime you move a package by hand you add to the cost of your product.

Now, the way to transport packages in the most economical manner is the real concern of every Alvey sales engineer. Here at Alvey we have made it our particular business to give industry the correct type of handling equipment to convey packages economically, safely, and with dispatch.

If in your plant there is some costly manhandling of packages still going on, do not let it continue.

ask an Alvey sales engineer to give you a recommendation based on a background of similar experience and understanding. Request a "job analysis."

ALVEY CONVEYOR MFG. CO.
9299 Olive Street Road, St. Louis 24, Mo.
Offices in Principal Cities

sues: January, 1950, pg. 22; July, 1949, pg. 35.—Ed.

To FLOW:
Portable Docks

In your January, 1950 issue we noticed an article entitled, "Pallet Program for Materials in Bags and Drums," by Mr. J. J. Hudson.

There was mention of portable docks used where no docks were available to permit the entry of lift-truck equipment into cars for loading or unloading.

We are interested in these portable docks and would appreciate some literature from the manufacturer.—E. J. Pelaccio, Plant Superintendent, Standard Brands Inc., Peekskill, New York.

To FLOW:
Packaged Lumber

Is any information available covering shipments of lumber in "packaged" or "bundled" form?

We propose to have the shipments made from mills on flat or gondola cars and loaded in such manner as to utilize a crane to handle the unloading and stacking. A fork truck would carry the bundle of lumber from yard storage to point of usage.

We are particularly interested in any experience your readers may have had in this type of lumber shipments. We would like to know if any trouble might occur due to mold because of absence of air in the bundle.—Harry C. Buttrick, Continental Motors Corp., Muskegon, Mich.

Reader Buttrick received tear sheets of the following FLOW articles: "Unit Loading (with steel strapping)," pg. 32, July 1947. "Unloading Time . . . 262 bd. ft. per minute," pg. 80, January, 1948. These contain specific answers to his questions.—Ed.

To FLOW:
For University Students

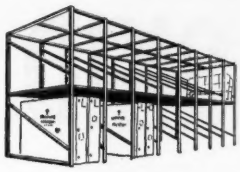
Page 73 of your April issue illustrates in concise form the proper method of making a Material Handling Survey. It is so well expressed that I would like to have 50 tear

(Turn to page 16)

BUILD YOUR OWN RACKS
the quick Unistrut Way, and Save!

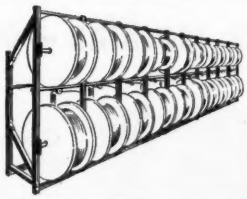
PALLET AND SKID RACKS

FURNITURE STORAGE RACKS

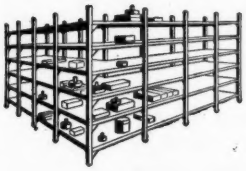


GENERAL STORAGE RACKS

WIRE AND CABLE REEL RACKS

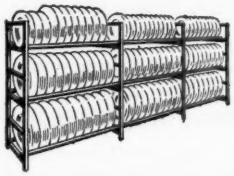


DIE RACKS

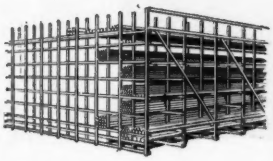


DISPLAY RACKS AND SHELVING

AUTOMOTIVE RACKS

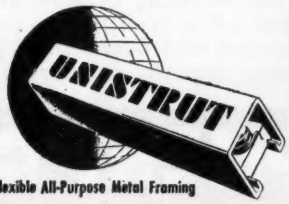


BAR STOCK RACKS



Prompt Delivery from Warehouse Stocks in Principal Cities — Consult your Telephone Directories

U.S. Patent Numbers
2327587 2380379
2363382 2345650
2329815 2405631
Other patents pending



The World's Most Flexible All-Purpose Metal Framing

Get Space-Conserving, Time Saving, Low Cost Storage for Any Type Product or Material with Unistrut All-Purpose Metal Framing

Completely Adjustable and Reusable
to meet your Changing Needs and Reduce Costs

With Unistrut *you* can build your own racks right on the job—any kind of racks your business requires—pallet racks, furniture racks, die and bar stock racks, display racks, wire and cable reel racks, glass racks, general storage racks and miscellaneous types of shelving, work tables, benches, conveyors and mounts. All can be built by anyone with only two simple tools—a saw and a wrench.

Unistrut is designed to help solve your storage and materials handling problems . . . and lower your costs . . . by conserving valuable floor space, cutting your labor and handling expense and providing a construction material you can use again and again without additional investment. Unistrut is the world's only framing material that is 100% adjustable, 100% reusable, requires no drilling, no welding, can be built by men without special skill or experience.

Unistrut is in use today in thousands of factories, plants, mills, warehouses, laboratories, shops and storerooms of hundreds of the largest companies in the world. You can use Unistrut in your business.

THE 3 QUICK UNISTRUT STEPS

1. Insert Nut into Channel

2. Locate Fitting and Nut

3. Tighten Bolt —it's done

NEW FREE CATALOG! Write today for your copy of the new 24 page, fully illustrated Catalog No. 600 —"Racks you can build with Unistrut." Includes full description of 46 different kinds of Unistrut racks, what Unistrut is, how it's used, and complete ordering information.

UNISTRUT PRODUCTS COMPANY
1013 W. Washington Blvd.
Chicago 7, Illinois, Dept. A-6

Please send me your new Rack Catalog No. 600, without obligation.

Name_____

Company_____

Address_____

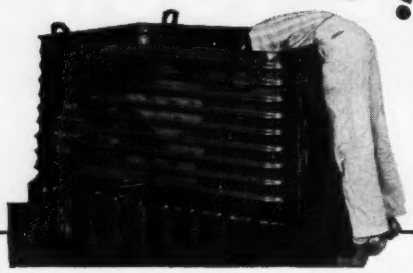
City_____ Zone_____ State_____

UNISTRUT PRODUCTS COMPANY
1013 WEST WASHINGTON BOULEVARD • CHICAGO 7, ILLINOIS

Do your workers have "THE BENDS"?

Production slows down and you lose money when assembly-line workers have to bend over to reach for parts.

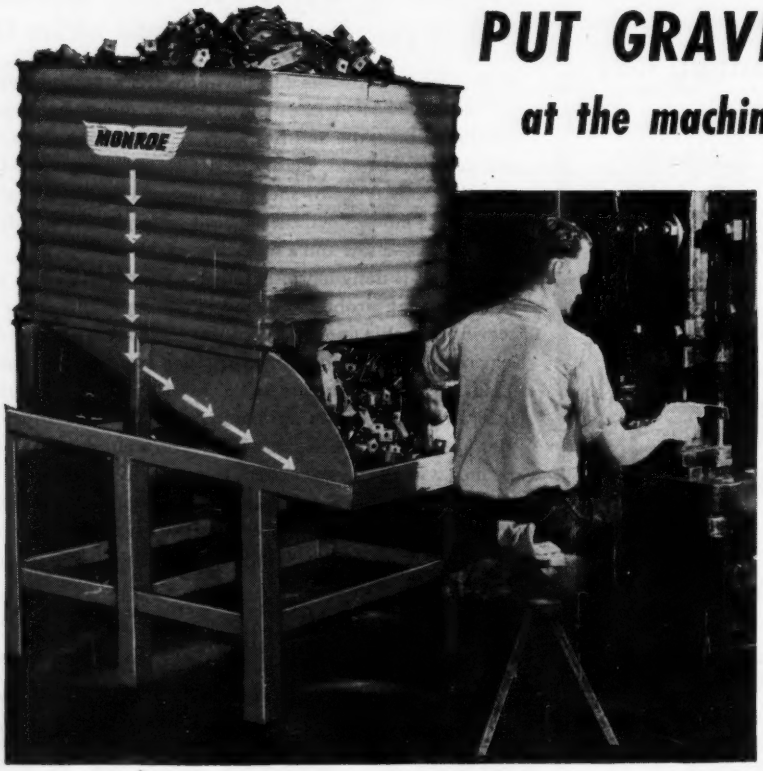
You can eliminate this waste motion, cutting labor and handling costs as much as 20%, with Monroe Drop-Bottom Skid Boxes.



MONROE DROP-BOTTOM SKID BOXES

PUT GRAVITY TO WORK

at the machine—on assembly lines



Gravity-flow from slanting floor of the Monroe Drop-Bottom Skid Box keeps stampings, castings and other small parts always accessible in waist-high tray of matching work stand.

●

Monroe Drop-Bottom Boxes can be used as conventional skid boxes or easily moved on or off separate work stand by ordinary high lift trucks.

●

Monroe Drop-Bottom Skid Boxes and separate work stands available in 6 different sizes and weights. Work stands come with choice of trays for delivery of parts to the front, or to the right or left side.

MONROE®

Write for literature on Monroe's complete Material Handling Equipment line, including: Drop-Bottom Skid Boxes; 8-Way and 2-Way Steel Pallets; collapsible wire and standard skid boxes; standard platforms, skids, nestling rings and accessories.

MONROE AUTO EQUIPMENT CO.

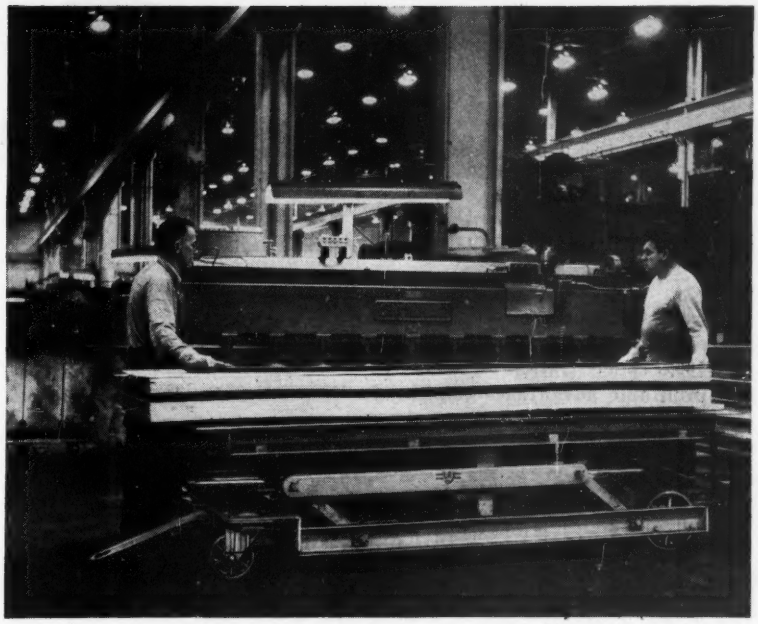
Monroe, Mich. – World's Largest Maker Of Ride Control Products

HOW CARRIER

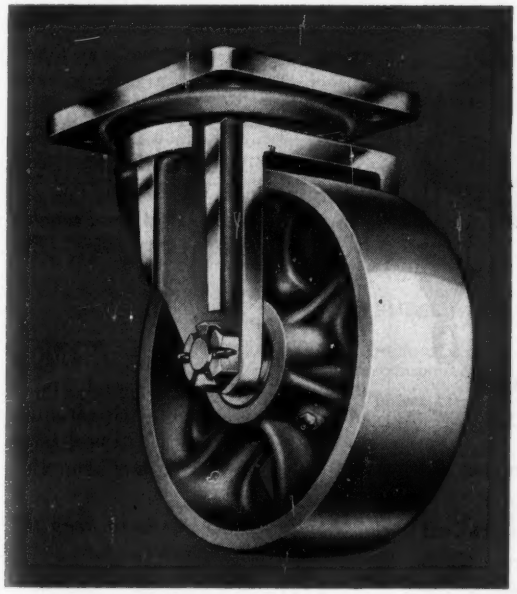
Cuts Costs

THROUGH THE

Reducible 30%



At Carrier Corporation's Syracuse plant, these positioning tables equipped with Bassick Super Heavy-Duty Casters cut cost of moving sheet steel from storage to presses.



Super Heavy-Duty Caster, with 10 in. wheel, is so strong it easily carries 10,000 lbs. per caster! Rigid or swivel. Also with 8 in. wheel.

Carrier Corporation is among the many firms that find an extra margin of profit in the "Reducible 30%" of materials-handling—the *one* manufacturing cost ripe for reduction today, cost analysts say. Wages, taxes, plant overhead—the other 70% are tough to trim. MORAL: Look to materials-handling for cost savings.

THIS "BIG-BOY" TAKES A LOAD OFF THE Reducible 30%

The simplest, safest, most economical way to move the heaviest loads, as Carrier and other top companies know, is on Bassick Super Heavy-Duty Casters.

This is only one of the many outstanding Bassick Casters that save production time, reduce maintenance on floors and "rolling stock." Other Bassick cost-cutting aids to materials-handling include position locks, grooved-wheel casters for angle track, "FLOATING-HUB" Casters, the new "Alcore" rubber-tread wheels, etc.

For information on these products, write to THE BASSICK COMPANY, Bridgeport 2, Conn. Division of Stewart-Warner Corp. *In Canada:* Bassick Division, Stewart-Warner-Alemite Corp., Ltd., Belleville, Ont.

Bassick

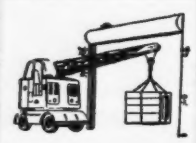
Making more kinds of Casters... Making Casters do more

PICK-UP POWER Where You Need it...

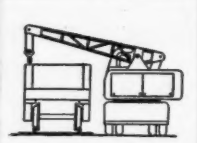
Plus

PUT DOWN POWER WHERE YOU WANT IT AND FULL CIRCLE FOLLOW-THROUGH!

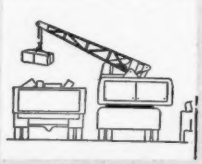
There's giant-strength and unrivalled manoeuverability in every Coles Crane . . . performing a variety of lifting and carrying operations with precision. The grouped finger-tip controls allow 100% concentration on operation. No other crane offers so many profitable advantages combined with such amazing versatility.



Low Headroom, made possible by cantilever type boom, combined with short wheel base, permits fast, safe operation in and out of buildings.



Exceptional manoeuverability; greater flexibility in loading and unloading gondola cars.



The advantage of the cantilever type boom mounted on high "A" frame, enables operator to work closer to loads and in narrow aisles.

Weather-proof, full-vision cab in a well-forward position for perfect observation and control, and safe and efficient material handling.

Safe-load indicator automatically cuts operation and warns operator of overload; protects equipment, operator, load and your investment.

Auxiliary attachments increase scope of usefulness.

Illustrated: **Model 8502, 7½ ton capacity. Capacities from 1¾ to 23 tons.**

CONSIDER THESE ECONOMIES:

- **Low Initial Investment**
- **Low Operation Cost**
- **Reduced Maintenance Cost**
- **No Costly Repairs**
- **Minimum Yard Space**

Write for full information and the name of your nearest dealer.

COLES CRANES, INC.
4307 South Paulina Street
Chicago 9, Illinois

COLES CRANES

LETTERS TO FLOW . . .

(Continued from page 12)

sheet copies, if possible, for distribution to my evening school classes in Materials Handling and Production Control at Rutgers University. If it is not possible to obtain tear sheets may I have permission to reproduce?—G. N. Collins, General Works Manager, J. W. Beardsley's Sons, Newark, N.J.

To FLOW:

Correction

I have reference to the final item in Column One, of FLOW DIGEST on page 57 of the April, 1950, issue, where reference is made to the article from the February, 1950, issue of ICE & REFRIGERATION. The last sentence of the digest states that "Walkie-type trucks are pictured in various operations." The only truck pictured was a heavy-duty, rider-type fork truck, and no reference was made anywhere in the article to the "walkie-type," or powered hand truck.—Ira S. French, Account Executive, EITA, Ketchum, MacLeod & Grove, Inc., Pittsburgh, Pa.

Sorry. We are using Mr. French's letter as a correction notice.—Ed.

To FLOW:

It's Helpful

I read your magazine with a great deal of interest and find I obtain many valuable helps from it. —Wm. C. Griffin, Purchasing Agent, L. S. Watlington Mfg. Co., Bloomington, Ill.

Reader praise tends to keep the editors trying harder.—Ed.

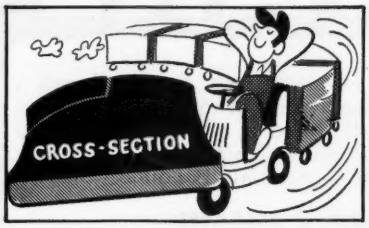
To FLOW:

Carton Disposal Problem

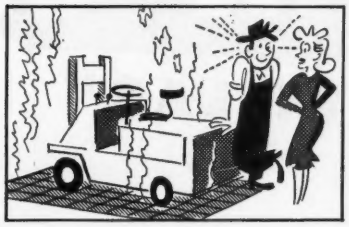
We acknowledge receipt of the FLOW DIRECTORY with thanks.

We have been coping with an empty carton disposal problem for years and it is running into real money now. It has been suggested that we consider the installation of an incinerator. Can you refer us to several manufacturers of the same? —David L. Kaltman, President, D. Kaltman & Co., Inc., Jersey City.

B.F. Goodrich



BFG Deluxe Cushions have the popular, high-rounded tread profile which absorbs vibration, gives easy steering!



HEAT A FACTOR IN YOUR PLANT? BFG "Oil-Proof" compound is the answer—highly heat resistant!

No problem is too small . . . nor too large for the T & W analysis man. Ask him in, even though your problems are little ones. His recommendations are *impartial.*

TIRE AND WHEEL T W ANALYSIS PLAN

helps materials handling men cut cost corners

Here's how you can make big savings in tire and wheel costs, equipment maintenance and floor maintenance. An experienced tire and wheel man will survey your operation. He will study loads, hauls, handling equipment, floors and hauling surfaces, and discuss any special tire and wheel problems you may have. On completion of this survey the BFG man, without charge or obligation on your part, will submit recommendations as to the best type and size tires and wheels for your particular service with information on the longest-wearing compounds and on retreading. He will also provide suggestions on tire care and maintenance.

Send in the coupon below and start the wheels rolling for a B. F. Goodrich industrial tire and wheel expert to visit your plant and make your cost-cutting T & W analysis. You'll find the BFG man is *impartial.* He has no "axe to grind" for any one "type" of tire . . . his company makes and sells *ALL* types in *ALL* sizes!

For example, BFG offers industrial tire users a six-way choice of tread rubber compounds. Each compound has been carefully engineered and developed for certain of our wide range of tire types to meet certain operating conditions. *Your T & W analysis includes recommendations on correct compounds!*

SPECIAL RUBBER COMPOUNDING—EXCLUSIVE WITH BFG

COMPOUND 1. **UNIVERSAL** . . . resistant to cutting, chipping and excessive wear. Greater cushioning compound.

COMPOUND 2. **LOW-POWER** . . . cuts power consumption by reducing rolling resistance.

COMPOUND 3. **OIL-PROOF** . . . impervious to oil or other petroleum products in operating areas. Resists higher temperatures.

COMPOUND 4. **NOVITE** . . . protects floors, helps eliminate noise and almost doubles load-carrying capacity.

COMPOUND 5. **SPECIAL NO-MARKING** compound will not mark or mar flooring.

COMPOUND 6. **STATIC-CONDUCTOR** . . . grounds the vehicle—where static is a danger factor, protects operator, guards against fire.

Dealerships Available In a Few Localities—Write B. F. Goodrich, Akron

The B. F. Goodrich Co.
Department TW-35
Akron, Ohio

Please give me additional information on your Tire and Wheel Analysis plan.

Name_____

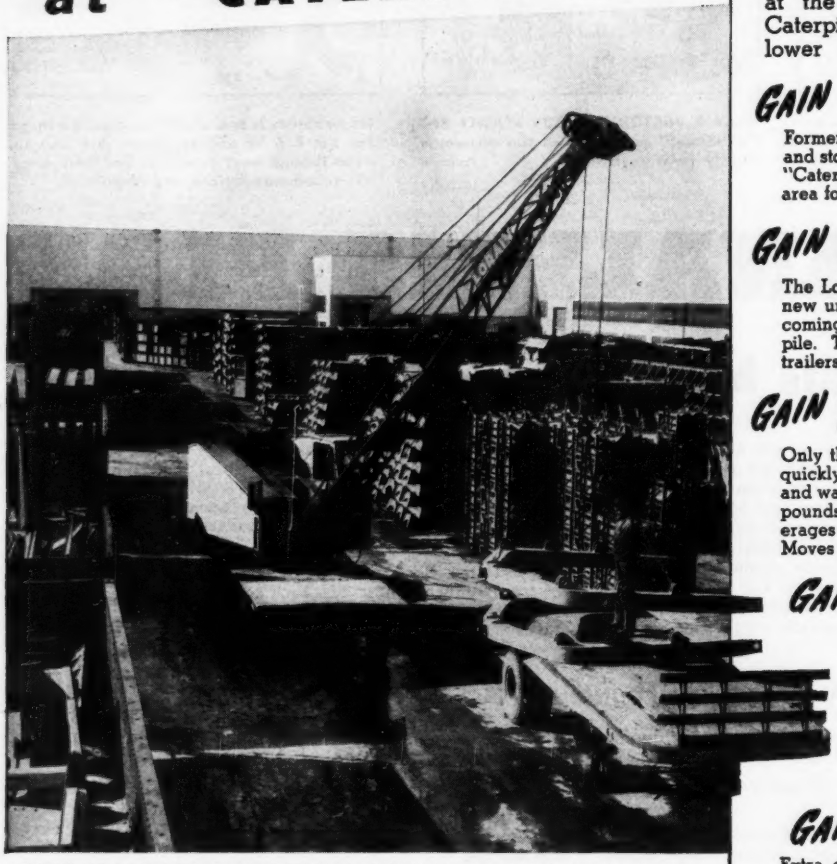
Title_____

Company_____

City_____ State_____

5 WAY GAIN WITH A LORAIN CRANE

at "CATERPILLAR"



A Lorain Crane has produced these five outstanding advantages at the Peoria, Illinois plant of Caterpillar Tractor Co. . . . to lower material handling costs.

GAIN 1 RELEASED FACTORY SPACE . . .

Former methods required inside unloading and storage. Lorain Crane method enabled "Caterpillar" to trade high priced factory area for low cost yard storage.

GAIN 2 NEW EFFICIENT YARD STORAGE . . .

The Lorain Crane established a complete, new unloading-storage cycle . . . from incoming railroad cars *direct* to yard stock pile. The same Lorain also loads yard trailers to fill shop orders.

GAIN 3 LIFTS, HAULS BULKY 8500 LB. LOADS

Only their Lorain Crane can lift and carry quickly the big, bulky "Cat" scraper, dozer and wagon structures weighing up to 8500 pounds. The Lorain unloads — then averages 500 feet travel to storage areas. Moves up to a mile made in overall plant use.

GAIN 4 300 HR. PER MONTH EFFICIENCY

All of the Lorain's advantages are on call throughout every shift . . . the same reliable efficiency day or night, winter or summer. Because of its many uses at "Caterpillar", the Lorain has averaged 300 hours of operation per month for the past 2½ years.

GAIN 5 A ONE-MAN YARD "CREW" . . .

Extra duty jobs are many at the "Caterpillar" plant. The Lorain Crane covers all operations — inside and out — setting structural steel or new machinery, spotting poles, handling pipe, bar steel, etc. Material handling and maintenance jobs are unlimited.

Write for booklet entitled "LORAINS IN INDUSTRY" . . . see how you can *gain* with a Lorain Crane on your material handling operations!

LORAIN SELF-PROPELLED CRANE FEATURES THAT LOWER MATERIAL HANDLING COSTS

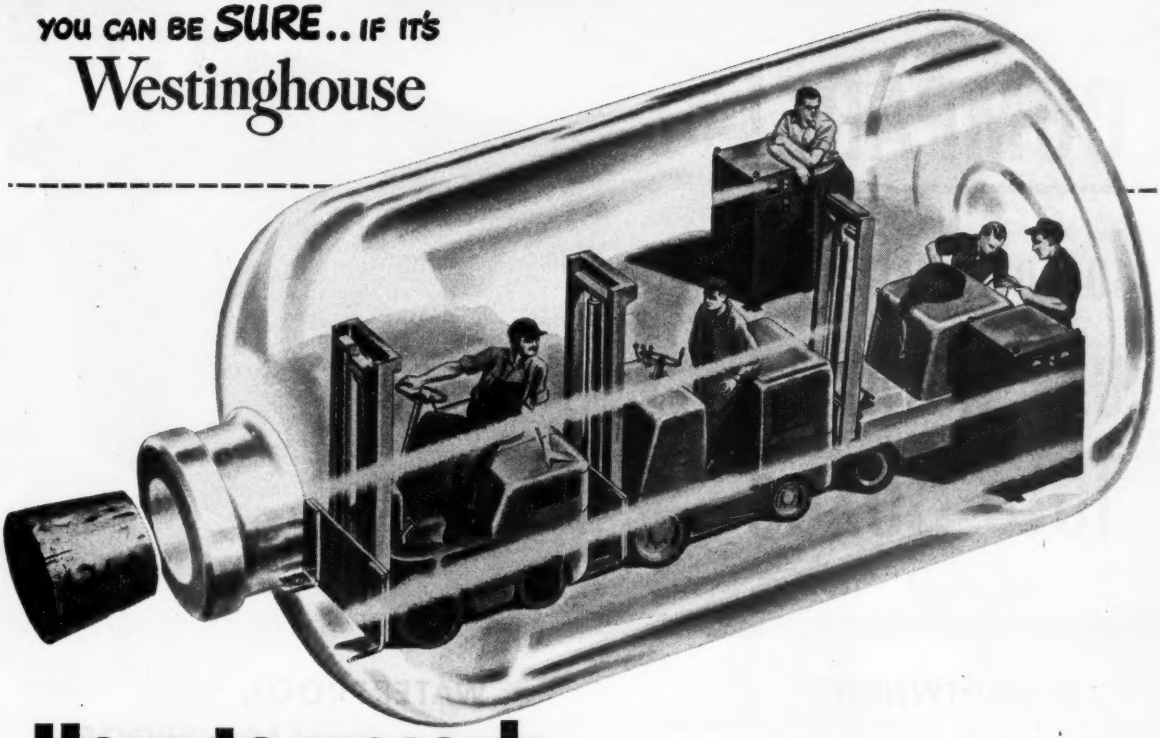
- One-man operation of turntable and propelling controls.
- One engine economically propels machine and powers all crane operations.
- Finger tip air power steering.
- All controls at operator's finger tips.
- Rubber-tire speed and mobility.
- 4 speeds in both directions—1 to 7 miles per hour.
- Will push or pull loaded trailers or railroad cars.
- Large, spacious utility platform.
- 4 and 6 wheel carriers available in 2 and 4 wheel drives.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN® CRANES FOR INDUSTRY

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



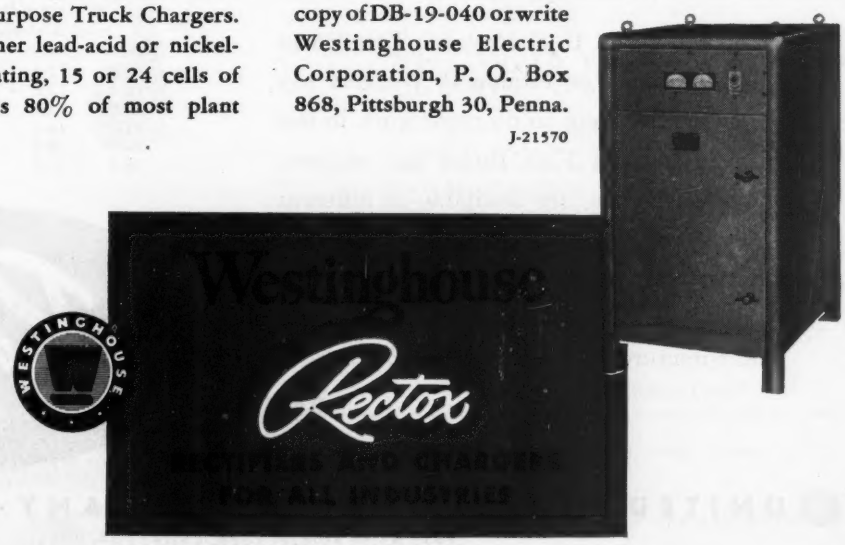
How to uncork YOUR charging bottleneck

Take a number of different-sized trucks with both lead-acid and nickel-alkaline type batteries . . . add a busy plant . . : and you have a charging problem. Trucks wait in line for one particular type of charger while there is plenty of open time on another type. This often is a real bottleneck—and an expensive one.

The problem is solved at the flip of a switch with Westinghouse Rectox Dual-purpose Truck Chargers. Combination units charge either lead-acid or nickel-alkaline type batteries. One rating, 15 or 24 cells of unusually broad range, meets 80% of most plant charging requirements and often 100% of them. Thus, Rectox chargers handle a greater number of trucks; bottlenecks are out. Further, chargers can be placed at strategic truck centers or cross-roads, or spaced at intervals along truck routes.

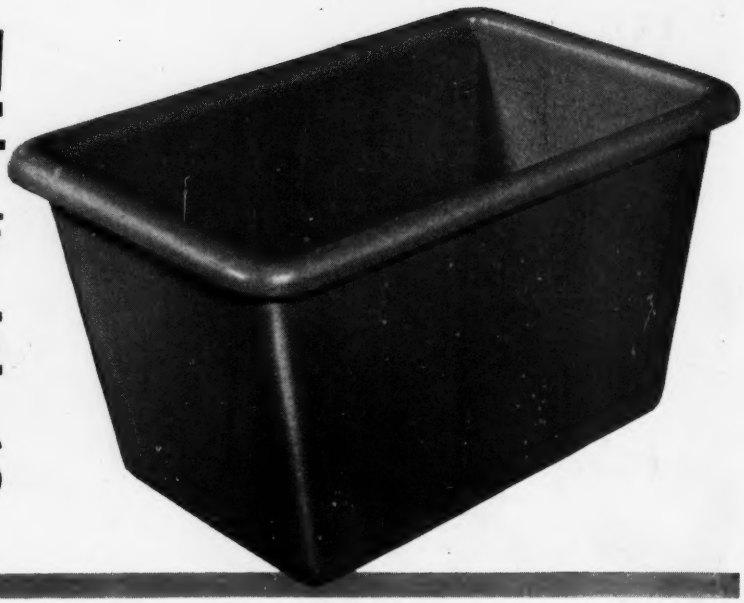
Do you have a similar problem? Check Westinghouse for an economical solution. Ask your local Westinghouse representative for details and a copy of DB-19-040 or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna.

J-21570



COMPARE!

10 ADVANTAGES OF U. S. ROYALITE Tote Boxes



★ **LIGHTWEIGHT**
(Less weight than ordinary boxes)

★ **NOISELESS** (Don't rattle or bang)

★ **UNBREAKABLE, NON-SPLINTERING**

★ **NON-WARPING, NON-CORROSIVE**

★ **WATERPROOF, STAINPROOF**

★ **NOT AFFECTED BY OILS, MOST ACIDS, ALKALIS**

★ **DIFFERENT COLORS MAKE CLASSIFICATION EASY**

You can't beat U. S. Royalite Tote Boxes for durability or economy! Workers say they enable them to do more work in less time. Royalite Tote Boxes are odorless, non-conductive, are available in different colors to simplify filing and classification of parts. You can order from 18 ready-made sizes. Royalite is also available in sheets for manufacture by your fabricator.

BOXES IN READY-MADE SIZES

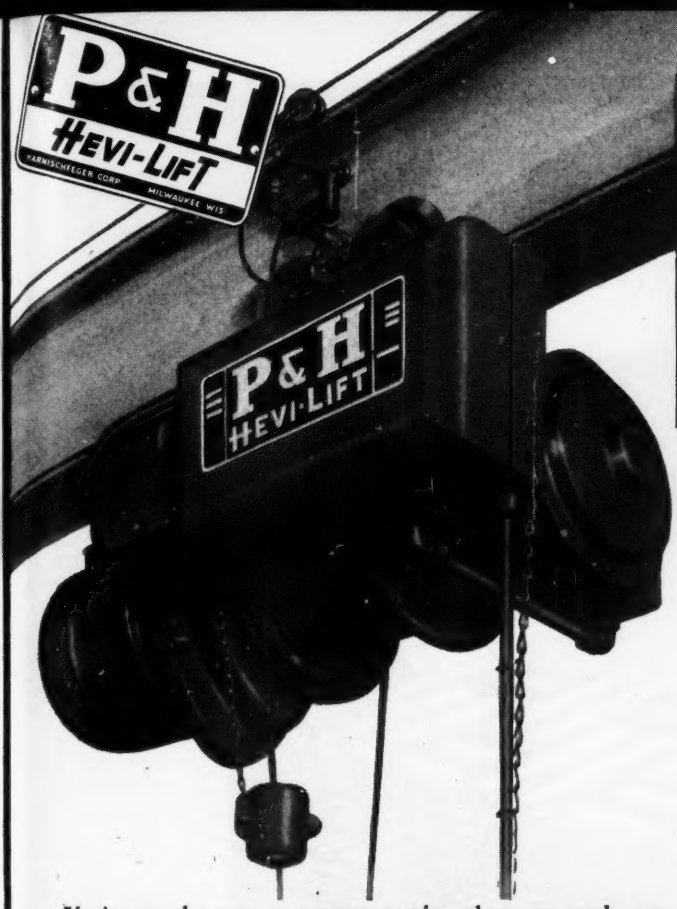
Here are a few of a wide range:

Inside Dimensions:			Weight
Length	*Width*	*Depth*	
18.0	12.0	6.0	2.20
18.0	12.0	12.0	4.80
22.0	14.0	12.0	6.00
22.0	16.0	8.0	3.68
24.0	18.0	14.0	8.25
25.0	25.0	14.0	10.20

U.S. Royalite

UNITED STATES RUBBER COMPANY · *Serving Through Science*

2638 North Pulaski Road, Chicago 39, Illinois



Get on the Beam..

WITH A *HEVI-LIFT* TO CUT YOUR HANDLING COSTS

You're on the way to new economies when you send your loads "thru-the-air" with a P&H Hevi-Lift. Wherever speed and frequent handling are factors, P&H Hevi-Lifts save money because *one man* does the whole job quickly and safely — by merely pressing buttons. This is the way it's done these days in thousands of locations — with all kinds of loads up to 15 tons.

Why temporize? Why delay savings the Hevi-Lift is ready to bring you *now?* The first step is to let us send you the new bulletin which shows dozens of money-saving ideas.

HANDLE IT "THRU-THE-AIR" AT LOWER COST

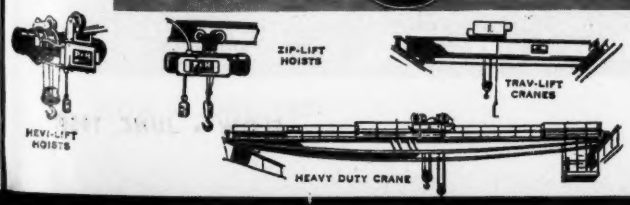
CAPACITIES UP TO 15 TONS

P&H

ELECTRIC HOISTS
4643 West National Avenue
Milwaukee 14, Wis.

HARNISCHFEGER
CORPORATION

HOISTS • WELDING ELECTRODES • MOTORS P&H EXCAVATORS • ELECTRIC CRANES • ARC WELDERS



THESE ADDED VALUES ARE STANDARD EQUIPMENT ON P&H HEVI-LIFTS

The P&H Hevi-Lift is built for years of hard service—backed by America's largest builder of overhead materials handling equipment. It costs you less to have the Hevi-Lift Added Value features than to be without them.

SAFER — True motor ratings insure against failure at full capacity loads and speeds. Thermal overload protection, 110-volt control current and crane-type limit switch provide maximum safety.

LIFETIME CONSTRUCTION — Precision-built . . . shaved gears . . . grease sealed bearings . . . moisture, dust and acid-proof.

SMOOTHER OPERATION — Motor specifically built for frequent reversals in hoist service.

MAIL THIS COUPON TODAY

HARNISCHFEGER CORPORATION, Hoist Division
4643 West National Avenue
Milwaukee 14, Wis.

Gentlemen: Please send your new bulletin on P&H Hevi-Lift Hoists.

Name.....

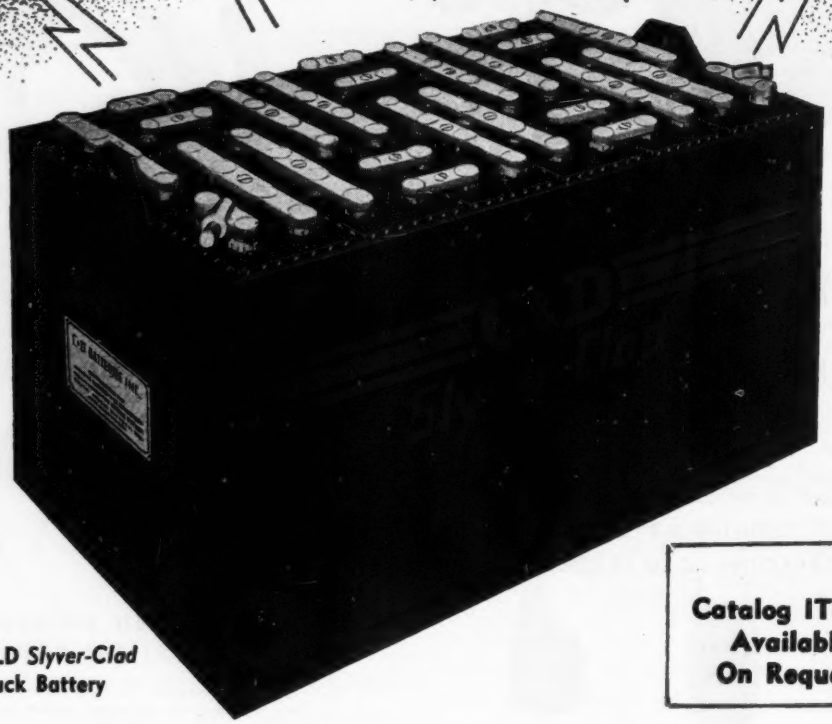
Company.....

Address.....

City.....**Zone**.....**State**.....

20%

ADDITIONAL K.W.H. CAPACITY



C & D FIVE-FOLD *Slyver-Clad*
Industrial Truck Battery

**Catalog IT-515
Available
On Request**

-at NO extra cost!

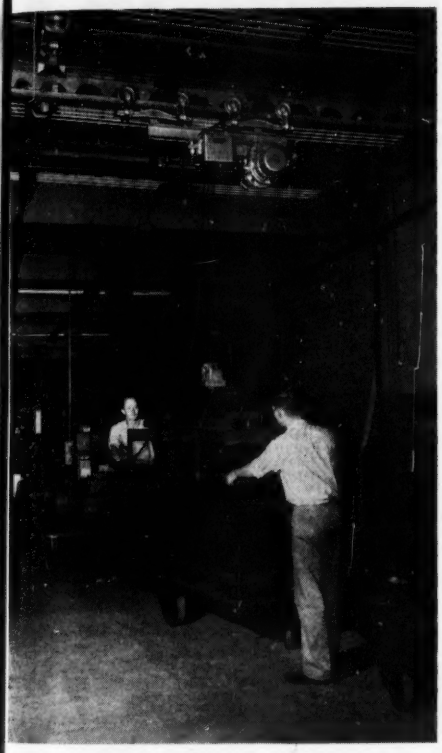
C&D BATTERIES, INC.

TELEPHONE · DIESEL · ELECTRIC INDUSTRIAL TRUCK · LOCOMOTIVE · STARTING & LIGHTING

Established 1906 **of Conshohocken, Pa.** SALES AND SERVICE IN PRINCIPAL CITIES

A 4-Point Program For A Metalworking Plant

THE OLD WAY, right—handling sheets individually was hazardous and costly.



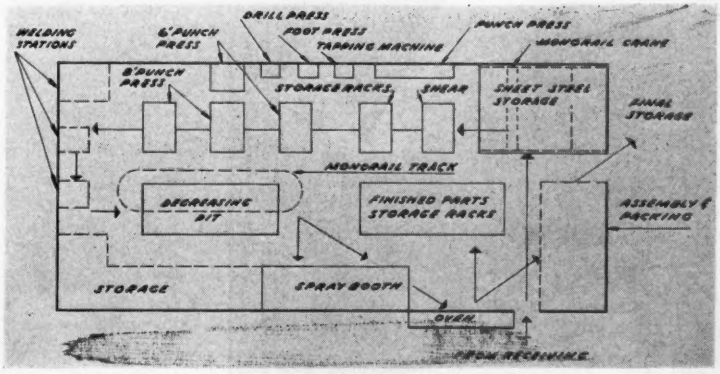
THE NEW WAY—a grab lifts 150 sheets in one unit. Storage space was halved.

- *1. Faster, less hazardous handling of sheet steel from incoming trucks to storage.*
- *2. Improved material flow from storage to fabrication.*
- *3. Greater output in degreasing.*
- *4. Efficient work carriers for a wide range of irregularly shaped items.*

THE United Mfg. Co., Division of United Advertising Co., New Haven, Conn., is a fabricator of sheet metal and electrical products. Sheet steel is used for lighting fixtures and instrument and electrical accessory cabinets.

Four-Point Modernization Program

The 50'x120' fabrication room is pictured and diagrammed on these pages. Raw material is received in



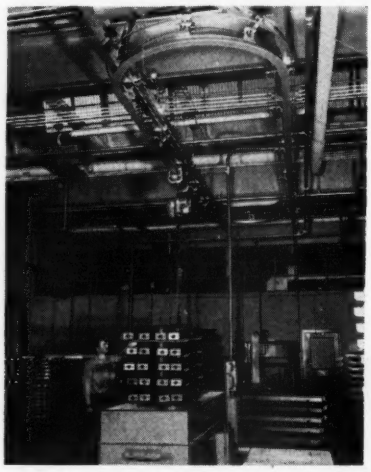
U-SHAPED FLOW eliminates backtracking, starts and ends near receiving and shipping.

another part of the building and fed to storage in the fabricating room. From this point, work proceeds in a U-shaped pattern with no backtracking. The room is noteworthy for its orderliness.

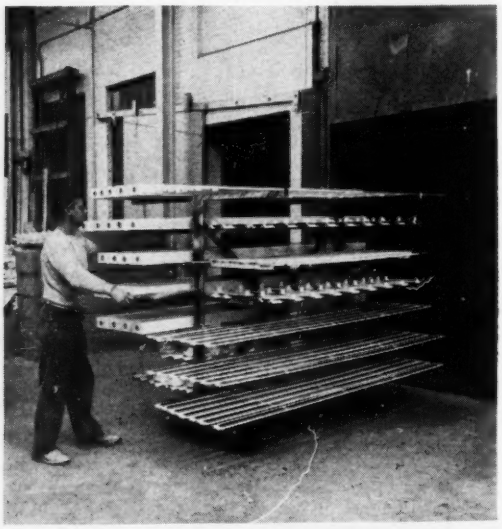
Factor I—Unloading

Sheet steel ranging from 24"x96" to 60"x144" is received in flat top highway vehicles — truck loads range from 10 to 30 tons. Before, the sheets were removed one at a time so that the unloading of several trucks often took as long as a week. Physical exertion was naturally a major factor. Also, because the plant is small and receivals are irregular, unloaders were pulled off other jobs. This decreased over-all plant efficiency and reduced total production.

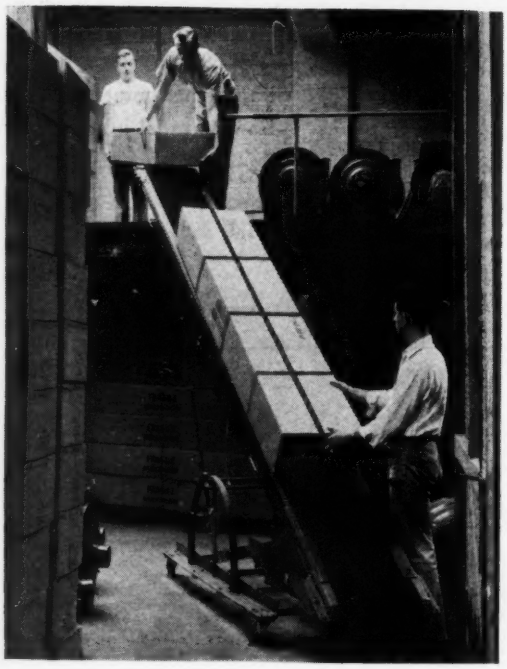
Now steel-strapped 4000 lb. bundles are unloaded by a monorail-hoist and a grab. The bundles are lowered on 1-2-1 castered tables for movement to storage in the fabricating room. Benefits from the revised method are: 1. Unloading time cut 66 per cent. 2. Physical exertion reduced. 3. A sharp decrease in accidents. 4. Improved employee morale. 5. Greater unit production since men are away from their regular jobs for shorter periods of time.



AN ELECTRIC HOIST and special racks upped the unit loads from 50 lb. and to 2000 lb.



SIMILAR WORK CARRIERS mounted on a castered frame transports many types of parts to oven.



PORTABLE BELT CONVEYOR is used for stacking in storage and for loading highway vehicles.

Factor II—Handling Out Of Storage

A similar story may be told of handling sheet steel in and out of storage. From the 36"x96" castered tables the bundled steel is unloaded and stocked by an electric hoist on a manually propelled traveling beam. A sheet grab with a hand wheel is used. For processing, the sheets are transferred from the stockpiles to the tables and advanced about 15 ft. to the first shearing machine. One of the exhibits shows a typical "before and after" handling operation.

An important saving is reported in total raw material storage area. Vertical storage space was formerly only partly used. Also, when sheets measured as much as 12 ft. in length, 15 to 20 ft. of aisle space was necessary for drawing them from the piles.

Now, since as many as 150 sheets are simultaneously handled by the overhead equipment, individual stacks can be higher and far less aisle space is necessary. This has resulted in the storage of more material in less than half the previous space. The extra area is now being

(Turn to page 30)

Walkie Powers Off-Bearing Cart

This powered off-bearing cart for large diameter pipe is credited with a production increase of 20 per cent! The power unit is a 6000 lb. walkie with the platform cut off. This machine, plus the yarding truck and tire-mounted crane have lifted over-all production 50 per cent.

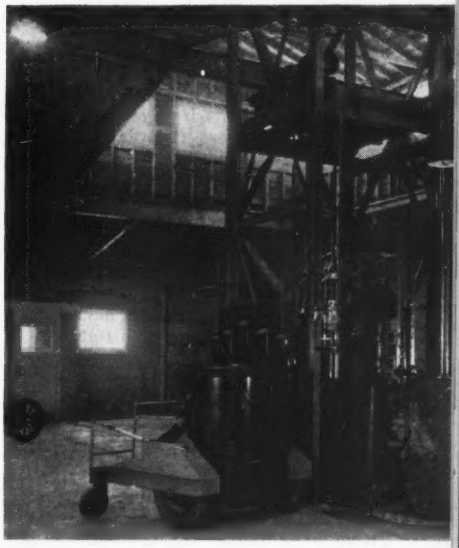
By WM. M. LAFFERTY,

Kentucky Concrete Pipe Co., Louisville, Ky.
Manager (Louisville Plant)

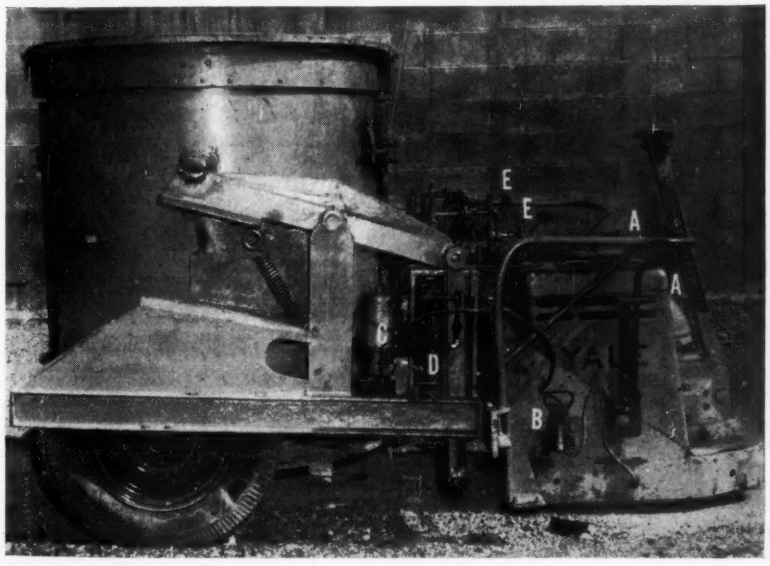
OUR company manufactures concrete pipe in diameters from six ins. to 60 ins. The time-consuming and effort-demanding element in this industry is found in "walking" during the loading of drying kilns by use of manually propelled off-bearing carts.

At our plant, the maximum distance from the pipe manufacturing machine to the far point of the kiln is 140 ft., which gives a maximum of 280 ft. per cycle of operation. While the distance dwindles as the loading of the kiln progresses, the factor of "too much walking time" remains as a serious drawback. Add to this the physical strain required on the part of operators when large diameter pipe are manipulated, and you have a

(Turn to page 45)



MANUALLY PROPELLED off-bearing cart created difficult work in handling large pipes, at right.



POWER UNIT added to cart (6000 lb. walkie with platform cut off) has made difficult task a one-man job. A—lifting control; B—plug in connection; C—motor with oil gear pump; D—hydraulic cylinder; E—lowering levers.

The Useful, Versatile Load Conveyor . . .

Stitched Canvas Belting

Data for conveyor design engineers and belt conveyor users. This discussion covers factors relating to construction, physical properties and application of stitched canvas belting.

***Part 1 of Three Parts*—Factors Controlling The Physical Properties Of Stitched Canvas Belting**

The Duck

In both rubber and stitched canvas belting the duck itself is obviously an important factor as regards ultimate strength, safe working stress, and elongation. In stitched canvas belting, the duck is also a factor in abrasion resistance.

The subject of construction and specifications of duck is extremely technical and voluminous, and concerns primarily the duck and the belt manufacturer. The data given here are intended to help the conveyor designer and the material handling engineer.

Testing Methods

There are a large number of practices in use for testing the tensile strength of fabric and finished belts, most of which have received some recognition. The same piece of duck may show a tensile strength of 300 lbs. or 700 lbs., or any intermediate value, depending on the method chosen. When the same duck is built into a belt, and the belt tested, an entirely different tensile strength value may be obtained. This is due to the fact that the same methods of testing are not adaptable to raw duck and finished belts. It is also dependent upon the belt manufacturer's skill in uniformly loading all of the warp threads in each ply. Whenever referring to any tensile strength figures it is absolutely imperative that the exact details of the testing methods be specified. The Bureau of Standards has found that the tensile strength in cotton fabric increases 7% in every increase of 1% in the moisture content. Results, therefore, must also be corrected to the standard basis of moisture content.

All of this leads to the conclusion that, for the duck itself, the use of tensile figures on an exact basis by the conveyor designer is rather impractical. Without voluminous data and elaborate testing equipment he had best rely upon the reputation of the belt manufacturer and consider tensile and elongation figures for duck as relative rather than absolute.

Weight of Duck

Belt duck is not a "numbered" duck and the specifications for belt duck are developed by the belt manufacturers. Belt duck is designated in terms of the number of ounces weight per square yard or per commercial yard (a piece 42" wide, 1 yd. long). While it is normal trade practice in referring to the grade of duck to use the commercial yard basis, this is not uniformly followed and the designer should be sure which basis is meant when referring to a specification. This is especially confusing because 32 oz. per commercial yard is a commercially used grade, as is 37½ oz. per commercial yard, and it so happens that 37½ oz. per commercial yard also weighs 32 oz. per square yard. Table 1 will be helpful in eliminating any confusions:

For the conveyor designer's purposes he can take in general the fact that the ultimate tensile strength of the belt, and hence the safe working stress, increases with the weight of the duck per unit area. Also the percentage elongation of the finished belt decreases with the weight of the duck per unit area.

Strength of Duck

For the duck specification that has been developed and proven by a leading company over the years, the figures shown in Table II can be used.

The ultimate strength of the warp indicates the allowable working stress of a belt; finished belt figures are given in Table VIII, Part 3 of this article. Among other things, the ultimate strength of the filler also indicates its ability to resist abrasion.

There are various weaves of 32 oz.,

Table I—Comparison Of Duck Weights

Weight per Commercial Yard	32 oz.	37½ oz.	39 oz.
Weight per Square Yard	28 oz.	32 oz.	33 oz.

Table II—Standard Duck Weights

	32 oz. non-guaranteed Spec. Duck	32 oz. guaranteed Spec. Duck	37 oz. guaranteed Spec. Duck	39 oz. guaranteed Spec. Duck
Weight Commercial Yard 42" x 36"	32 oz.	32 oz.	37½ oz.	39 oz.
Ultimate Strength (ASTM Grab Test)				
Warp	533 lb.	550 lb.	600 lb.	775 lb.
Filler	250 lb.	300 lb.	300 lb.	300 lb.

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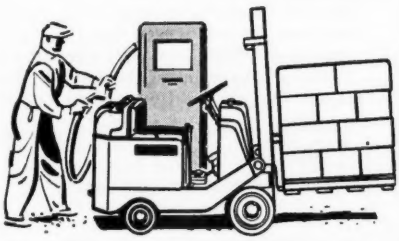
every handling job is easier with TOWMOTOR MH!



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37½ oz. and 39 oz. duck, depending on the service of the belt and the experience of the belt manufacturer. In general, the warp threads are closer, say, 28 per inch, than the filler threads, which may be 16 per inch. Sometimes the threads are all of the same size, but some belt-makers prefer to have the filler threads of conveyor belts heavier than the warp threads because they take most of the abrasion; they also make a stronger joint, when, as often happens, the belt fastener used is of the wrong type or is improperly applied.

The Folding

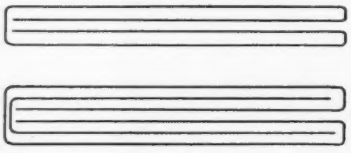
The actual folded construction of a belt is largely governed by the width of the finished belt and the width of the available duck. Its effect on the ultimate strength and elongation of the finished belt is negligible except for the skill with which the belt is assembled by its manufacturer. The location of the seams, however, is sometimes an obvious consideration of the conveyor designer and it is well that he understand the limitations of each type of construction in order that he know what can be manufactured.

Belting duck is normally finished up to 60" wide, and with this in mind the limitations stated for each of the following methods of folding can easily be understood.

Figure 1 & 2. Overlap

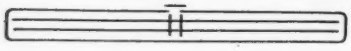
This type of belt is made up to 20" wide, in 3 ply, from one piece of duck, as shown in Fig. 1. It can also be made up to 12 ply, 20" wide, by the insertion of fillers, as shown in Fig. 2.

Figure 3 & 4. Folded



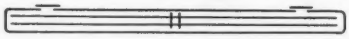
This type is made up to 15" wide, in 4 ply, from one piece of duck, as shown in Fig. 3. It can be made up to 12 ply by the insertion of fillers as shown in Fig. 4.

Fig. 5. Single Laced



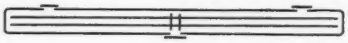
This type is made up to 30" in width and from 2 to 12 ply. After the fillers are cut to width and stitched together, the outer cover is laced along the entire length of the belt. This lacing and the seam are then covered with seam tape and stitched on quarter inch centers.

Fig 6. Double Laced



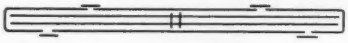
This type is made from 30" to 52" wide and from 3 to 12 ply. After the fillers are cut to width and stitched together, the outer cover is double laced along the entire length of the belt. The lacing and seams are then covered with seam tape and stitched on quarter inch centers.

Fig. 7. Triple Laced



This type can be made from 52" to 112" and from 3 to 12 ply. The fillers are spliced to width and the splices cemented. They are then stitched together with the splices staggered. The outer cover is then triple laced along the entire length of the belt, as shown in Fig. 7. The lacing and seams are then covered with seam tape and stitched on quarter inch centers.

Figure 8. Quadruple Laced



This type can be made from 112" to 132" and from 3 to 12 ply. The fillers are spliced to width and the splices cemented. They are then stitched together with the splices staggered. The outer cover is then quadruple laced along the entire length of the belt, as shown in Fig. 8. The lacing and seams are then covered with seam tape and stitched on quarter inch centers.

Fig. 9. The Asbestos Covered Belt

The asbestos covered belt consists of two sections. The canvas section, upon which we rely for carrying the working stress of the belt, and the asbestos cover which insulates and protects the canvas section. The canvas section is constructed the same as any finished belt. See Figures 1 to 8, inclusive. The asbestos cover is then folded as shown in Fig. 9. The asbestos cover never has any exposed seams and any additional plies are added by placing fillers inside the basic cover shown.

Dimensional Control and Warp Loading

Folding of a belt also, of course, governs its finished width and length. The dimensions must be figured to compensate for the fact that during stitching the belt narrows in width and shortens in length. During the stretching process the belt also narrows in width as it increases in length. Great care must be taken by the manufacturer to get a uniform loading of all warp threads in all plies. One of the important considerations is that after the filler has been cut to its calculated width and stitched together, this assembly must then be stretched to a carefully determined length before it is assembled with the cover for final stitching, since the inner stitching of the filler shortens its cut length. Years of accumulated folding data have enabled manufacturers to determine this with infallible accuracy.

Folding must be accomplished very accurately along the warp threads without crossing them. A special machine has been developed which creases the duck with an accuracy that cannot be achieved in any other way and makes it possible for the duck to be folded accurately along the crease. This creasing also pre-stretches the filler threads to eliminate any chance of buckling in the creases, concentrating wear.

Endless Construction. Folded Endless.

The folded endless joint can be used with the overlap belt (Fig. 1), or the folded belt (Fig. 2), with or without fillers. In making this joint, the entire width of canvas is unfolded and is cut at an angle which has been determined through field experience. The two ends are then matched in the unfolded condition and secured with seam tape cemented along the entire length of the cut. If fillers are present the ends are first frayed, woven together, and cemented. Filler joints are stepped off so that at any point of the belt all plies except one are solid duck. The belt is

Fig. 10.

then folded and stitched. This distributes the joint along a large length of the belt as shown in Fig. 10.

Wrapped Endless

The wrapped endless belt is actually endless and has no joint whatever. It is made by using one continuous piece of duck, either woven or cut to the calculated folding width of the finished belt, and wrapped around one ply upon the other. The starting and finishing ends are cut at an angle from the center down to the edges and the sides of this angle are finished with seam tape cemented along each side. The entire belt is then stitched.

When the belt is cut to width rather than woven to width, one selvage edge is always used and the other edge is finished with a special lockstitch along its entire length, after which this edge is further protected by applications of a flexible cement. This is the strongest type of endless belt that can be made.

(Turn to page 56)

3 specific handling problems solved at OTIS TERMINAL WAREHOUSE WITH BAKER FORK TRUCKS

The Otis Terminal Warehouse Corporation, one of Cleveland's largest warehouses, handles about 17,600,000 pounds of merchandise per month. Approximately 25% of this tonnage is handled by two Baker FQ (light-weight, low-cost) Fork Trucks installed in July 1949. These trucks are used for unloading, storing and loading all types of merchandise for shipment.

The use of Baker Electric Fork Trucks has solved three specific problems which confronted Otis:

1. The hazard of breakage in handling fragile merchandise has been materially reduced by smooth starting, smooth acceleration and smooth lifting and lowering of loads.
2. Clean electric power has made low-cost mechanized handling with Fork Trucks possible in certain confined areas which cannot be ventilated.
3. Maintenance costs of handling equipment, which were considered excessive, have been reduced, with the added resulting benefit of less time out of service for repairs.

(Top) *Otis takes full advantage of storage space by tiering to the ceiling.*

(Center) *Portable roller conveyors speed loading and unloading of palletized merchandise on freight elevators.*

(Lower) *Baker Fork Truck tiers drums in storage. Lower tier is placed on end, and second tier rolled on upended drums.*

Since nearly 100% of all labor at Otis Terminal is for material handling, the efficient use of Fork Trucks has kept their operating costs in line. Moreover, by tiering, Otis gets maximum capacity from storage areas.

A Baker Material Handling Engineer will gladly show you how you can solve similar handling problems in your plant or warehouse.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Company*

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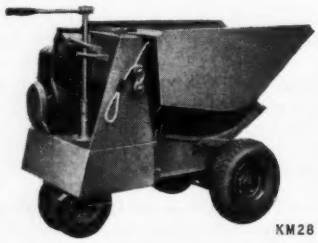
Now you can safely haul over ½-ton loads with one-man economy. Kwik-Mix *fully-powered* Moto-Bug carries up to 1200 lbs. on sturdy, 4-ft. flat-bed platform . . . makes more trips per hour because power does all the hard work. Operator rides on back step . . . has positive steer for easy spotting, reverse power for back-up. No pushing, *no pulling*. Moto-Bug travels 1½ to 4 m.p.h. forward *and reverse*, easily takes full load up 20% ramps. Quickly pays for itself in more production per man-hour. Platform has stake pockets for side-boards . . . tilts for easy pull-away when unloading. Positive steer, plus handy 33" width, gives quick maneuverability in crowded aisles and narrow doorways . . . turns around in own length. Interchangeability from flat-bed to 12 cu. ft. hopper extends Moto-Bug economies to handling foundry sand, coke, scrap, concrete, and other bulk materials. Big-capacity hopper (below) has low loading height, instantaneous gravity dump, and handy rope control for partial load discharge at any time.

Standard-make, 4 h.p., 4-cycle gasoline engine packs plenty of power to carry heaped loads over soft footing. Dual steering wheels, and choice of big single or dual drive tires assure ample load flotation, traction, and handling ease on or off pavement, anywhere around shop or factory yard. All these Moto-Bug advantages add up to easier materials-handling, more output per man-hour, and lower costs *FOR YOU*.



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Send us more facts on low-cost Moto-Bug with: ☐ 1200-lb. platform ☐ 10 cu. ft. hopper.

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KWIK-MIX COMPANY
PORT WASHINGTON, WIS.
(Koehring Subsidiary)

4-POINT PROGRAM . . .

(Continued from page 24)

utilized for storage of semi-finished parts.

When steel is moved via castered tables to shearing, a platform is added to give necessary working height for the subsequent feeding operation. The height of the table is thus raised to 31½", which is the same as the height of the machine bed. Thus proper positioning is obtained, and productive jobs are made easier.

Factor III—Degreasing

After shearing, small parts are placed on skids and hand trucked through various fabricating operations; larger and longer pieces are replaced on the castered tables. The material moves to as many as 11 stations composing the battery of fabricating equipment. After machining and welding (if necessary), parts are temporarily stored in one of several areas located at the north end of the room.

Not so long ago, manual methods permitted the degreasing of a maximum of 50 lb. of material at one time. Long parts, such as those which make up the body of lighting fixtures, had to be degreased individually.

As part of the modernized degreasing project, the company installed an oval monorail track and a one-ton electric hoist. After studying the many types and sizes of parts which are degreased daily, two racks consisting of a series of angle iron arms bolted to central posts were designed and built. These posts were bolted to a cross piece from which extended a long vertical member. A hole at the top accommodates the hoist hook.

While one rack is in the degreaser, the operator loads the second rack. Lips on the ends of the arms are designed to retain the load yet allowing the parts to be placed and replaced in a minimum of time. For small parts, additional angle irons are laid across the arms.

Notched metal sleeves are fitted over the horizontal arms to accommodate tubular items, preventing their rolling off or shifting which would mar the surface.

With the present method, up to one ton can be handled by the hoist and one rack. Twenty or more long sections can be accommodated now as compared with only one previously. The output is increased because of (a) larger loads and (b) faster handling by electric hoist.

Factor IV—Work Carriers

Castered racks are used for transferring parts from the paint department to the oven. These racks consist of angle iron arms welded to central posts. They are similar to the ones used in degreasing except the vertical member designed for overhead handling is replaced with one three-ft. length of pipe welded to each end of the frame. These are designed for pushing and pulling by an operator. These engineered work carriers have met the problem of handling large numbers of irregularly shaped in-process parts.

After leaving the oven, the parts are placed in permanent racks.

Electrical and instrument accessory cabinet components are sent to assembly in another part of the building. Lighting fixtures are assembled and packed in the fabricating room. These units are packed in long fibreboard boxes which are secured with two lengths of steel strapping. They are then reloaded on the castered trucks (the same used for sheet handling) and moved to storage or direct to shipping. A portable belt conveyor is used for both stacking in storage and for loading outgoing highway vehicles.

At present both receiving and shipping are carried on in the same area. The company lists a change in this set-up as a possible factor "five". Studies are now being made to investigate the advantages of cutting a new door in the building and installing additional equipment to load the outgoing carriers.

SAVE on floor-to-floor handling

Typical floor to floor operation in large warehouse utilizes Farquhar Conveyors to move cartons and other commodities from receiving room to second floor storage.

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Let a Farquhar Conveyor system relieve you of the time-consuming, money-wasting headache of floor to floor materials handling. Distributors, warehousemen and manufacturers everywhere enthusiastically report that Farquhar Conveyors save them big money! *"Our Farquhar Conveyors paid for themselves in less than a year,"* they say. *"Handling costs cut in half" . . . "Doubled our production as compared with previous methods!"*

Farquhar Conveyors save time, labor and money through *all* channels of manufacturing and distribution. If you move *any kind* of bulk or packaged materials either horizontally or from floor to floor . . . bags, bales, boxes, cartons, crates, coal, ashes, refuse, raw materials . . . if you load, unload, stack, pile or store these materials . . . Farquhar Conveyors will *slash* your handling costs and *boost* your margin of profit! Find out *now* how you can solve *your* material handling problems with Farquhar permanent, semi-permanent or portable Conveyors . . . clip the coupon and mail it . . . *now!*

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Chain Slings...
Material Handling Tools

The application of chain slings in connection with cranes, hoists and derricks is almost unlimited. Those of special alloys facilitate a variety of processing operations, and standard types of chains are vital "production tools" in storage and/or transfer operations characterized by frequent lifts and the movement of sizable tonnages.

SAFE LOAD POUNDS 2 LEG SLING CHAINS

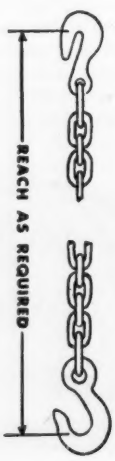
BASED ON 50% PROOF TEST

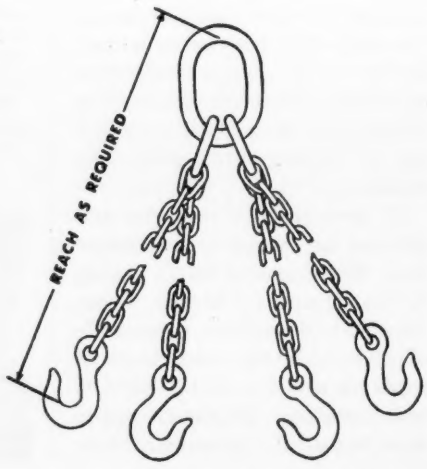
ANGLE / SIZE CHAIN	SINGLE CHAIN 90	60	45	30	20	10
STEEL						HEAT TREATED & DRAWN
1/4"	2,150 lbs.	3,700 lbs.	3,025 lbs.	2,150 lbs.	1,450 lbs.	725 lbs.
3/8"	4,275 "	7,400 "	6,050 "	4,275 "	2,925 "	1,475 "
1/2"	7,000 "	12,100 "	9,900 "	7,000 "	4,775 "	2,400 "
5/8"	10,125 "	17,500 "	14,300 "	10,125 "	6,900 "	3,500 "
ALLOY						HEAT TREATED & DRAWN
1/4"	2,750 lbs.	4,750 lbs.	3,900 lbs.	2,750 lbs.	1,875 lbs.	950 lbs.
3/8"	6,600 "	11,400 "	9,300 "	6,600 "	4,500 "	2,275 "
1/2"	11,250 "	19,250 "	15,750 "	11,250 "	7,600 "	3,850 "
5/8"	16,500 "	28,500 "	23,250 "	16,500 "	11,250 "	5,700 "
3/4"	23,000 "	39,800 "	32,500 "	23,000 "	15,700 "	7,950 "
PUDDLED IRON						
3/8"	2,700 lbs.	4,700 lbs.	3,800 lbs.	2,700 lbs.	1,850 lbs.	940 lbs.
1/2"	4,500 "	7,800 "	6,350 "	4,500 "	3,100 "	1,570 "
5/8"	6,900 "	12,000 "	9,750 "	6,900 "	4,700 "	2,400 "
3/4"	10,100 "	17,500 "	14,000 "	10,100 "	6,900 "	3,500 "
7/8"	14,000 "	24,000 "	19,500 "	14,000 "	9,600 "	4,900 "
1"	18,600 "	32,000 "	26,000 "	18,600 "	12,700 "	6,500 "

THIS IS A SECTION of a chart available from one manufacturer showing safe working loads perscribed for single and two-leg sling chains.

CHAIN slings may be used in direct contact with the load (as a choker, for example) or as a support for trays, boxes, grabs, buckets and other accessories. Flexibility is obtained in many plants by equipping certain types of on-the-floor load carriers with crane lugs. While such vehicles are usually propelled by tractors during certain stages of fabrication, they are later suspended from chain slings for transfer by crane over congested manufacturing areas. Thus the use of chain slings makes a dual-purpose load carrier which serves to conserve manufacturing space and aid production.

Chain slings consist of a series of welded or forged links. They are constructed of two main types of material (a) wrought iron and (b)





TYPICAL CHAIN SLING PATTERNS. At left, single chain with hooks at both ends. Figure at right has four-leg chain attached to oblong link.

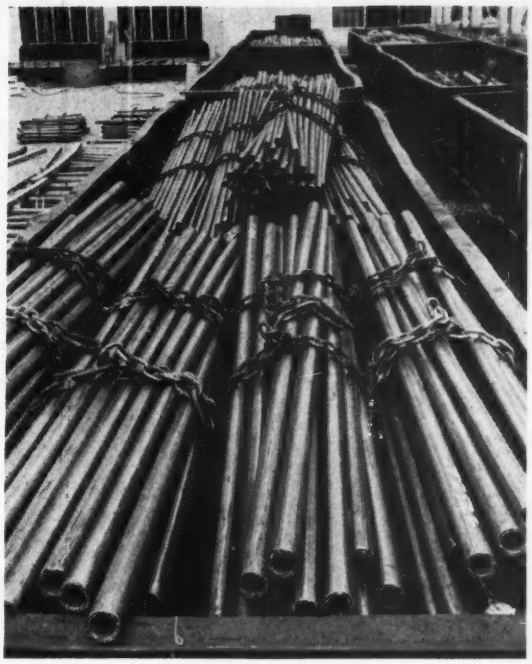
alloy steel. Each type has its own advantages and uses. Particular manufacturing conditions — acid and heat, for example—require certain types of chain which are best suited to withstand the effects of various processing operations.

Slings are available with one, two, three and four legs. One, two, and three-leg slings have the legs attached to a pear-shaped or oblong link or ring at the head end. The free end may be equipped with a sling, grab hook or ring. When a sling has four legs, they are attached in pairs to links, which in turn are connected to a head link.

Iron and Steel Slings

Iron slings are recommended when sharp drops and jars are encountered, steel slings when working under conditions of extreme heat and/or with various acids. Wrought iron slings are designed to offer good resistance to corrosion, notching and brushing, and have good impact resistance. Link elongation serves as a warning of overload.

Alloy steel sling chains are usually made from nickel-moly alloy steels. The analyses most commonly used are AISI-4610, 4615, 4620, 8620 and 2320. Chain manufacturers recommend alloy steel slings for operating conditions under temperatures up to 1000°



IN THIS steel mill operation a large tonnage of tubes is moved regularly between plants in gondolas. All lifts are shipped in chain slings. Results: Quick unloading at destination, each numbered bale remains identified as a lot according to No., type of steel, processing method.

Left: LOAD of axle housings is supported by two chain slings used as cradle. Crane hook has spreader beam with two double hooks. Right: SINGLE LENGTH OF CHAIN is passed over hoist hook and around lift of bar stock, illustrating choker method.

NEW Fairbanks Series "23" Double Ball Race SWIVEL CASTER

The NEW Fairbanks Series "23" Double Ball Race Swivel Caster* line is designed for greater load carrying capacity in the medium duty field.

STRONGER ON EVERY POINT

1 **NO KING-PIN** the No. 1 weak spot of ordinary casters. It's eliminated!

2 **"LOCK-WELD" CONSTRUCTION** Instead of being a separate piece, projection welding makes lower raceway integral with top plate. Retains perfect alignment!

3 **PATENTED LEG DESIGN** disperses shocks and overloads over a larger segment of raceways. Resists distortion. Lasts longer!

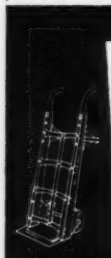
4 **LARGER SECONDARY RACEWAY AND BALLS** provide tremendously increased swiveling efficiency and greater shock absorption of overloads. Easier working!

5 **COINED RACEWAYS** insure smoother operation through extra hardness. Improve with use!

6 **PRESSURE LUBRICATION** by Zerk Fittings reduces friction and wear!

*PATENTED

Rigid Casters, Series "33" in matching heights



THE **Fairbanks** COMPANY

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Fahrenheit and also under conditions of low temperatures such as from zero to 20° below zero Fahrenheit. Alloy chains operating at 10° above zero and down to 20° below zero Fahrenheit are far superior to wrought iron chain, which loses its resistance to shock and also its tensile strength quite rapidly when temperatures below 32° Fahrenheit are reached. Alloy chain should not be annealed, as annealing will remove the best qualities of the chain. This chain is not subject to grain growth or work hardening as is wrought iron chain.

Fittings for Flexibility

Fittings adapt chain slings to a large number of operations and products. Hooks, rings, and pear-shaped or oblong links are well-known examples. When cradling the load, a single chain is employed with a link or ring at each end. Fittings are attached to the crane or hoist hook and the load is contained within the closed loop of the chain. In most cases, two or more such slings are used in order to obtain proper balance of the suspended load. Frequently the sling is formed by a single chain equipped with a grab hook at one end and a ring or link at the other. After the sling has been passed around the load, the hook engages one of the chain links, thus completing the sling.

When the load is carried in a choker arrangement, a single chain is usually equipped with a sling hook at one end and a ring or link at the other. The ring or link is attached to the crane or hoist hook, the chain placed around the load, and the hook attached to the chain. As the load is lifted, the encircling section of the chain is pulled tight and the hook pushed down.

When such accessories as grabs, trays, boxes or buckets are involved, or when certain extensions on the load itself provide an attachment for the chain hooks or rings, single, double, triple and quadruple sling chains are used. The deter-

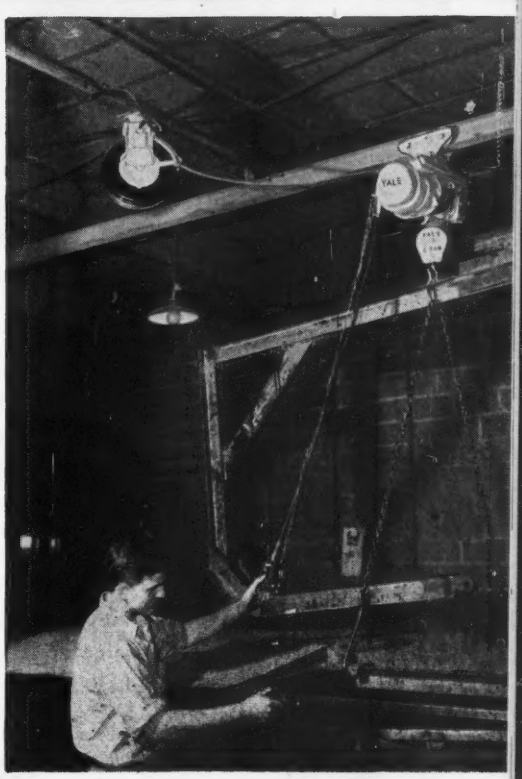
Cut Costs WHERE YOU CAN CUT THE MOST

MATERIAL HANDLING COSTS absorb as much as ⅓ of every manufacturing dollar. To trim those costs requires systemized handling procedures plus the right equipment.

Efficient Yale Material Handling Machinery has brought new operating economy to thousands of metal producing and fabricating plants throughout the country. It can do the same for you.

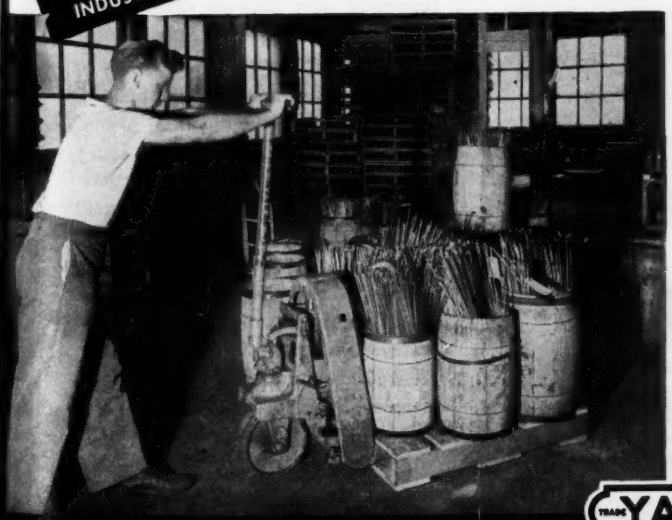
Big-capacity Yale Hand Lift and Power Trucks wipe out delays—quickly get material where it is needed. Hoisting operations are stepped up wherever Yale Hoists are used. And the precision accuracy of Yale Scales saves money—prevents errors before they can occur.

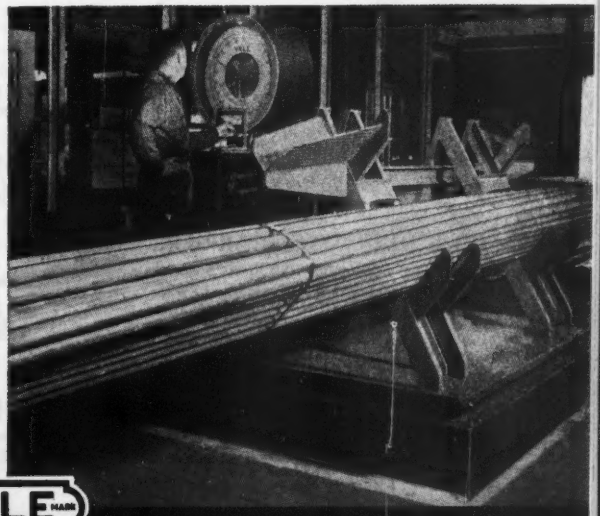
Cut costs where you can cut them the most—in lifting, moving, weighing and warehousing. The nearby Yale representative will gladly demonstrate how you can analyze your handling operations and select the best material handling machinery for the job. See your telephone book or get in touch with headquarters.



YALE
TOOLS THAT KEEP INDUSTRY "ON THE MOVE"

THE YALE & TOWNE MANUFACTURING CO.
Department L-115
Roosevelt Boulevard Philadelphia 15, Pa.





TRADE YALE MARK

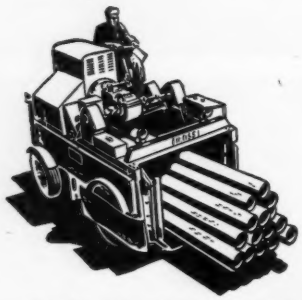
MATERIAL HANDLING MACHINERY · *hoists . . hand and electric · trucks . . hand lift and power · industrial dial sc*

*At Mechanical Handling Systems, Inc. it's CONVEYOR ASSEMBLIES

. . . are a "CINCH" for ROSS Lift Trucks

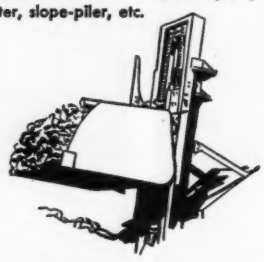
Handling this heavy unwieldy conveyor assembly is typical of the jobs expected to be done by ROSS Lift Trucks. And such unusual tasks are routine for the versatile ROSS. That is why more and more plants look to ROSS for time-saving, cost-reducing big-load material handling.

Profit from the experience of others . . . make the ROSS Lift Truck a vital part of your material-handling system. There is a wide range of dependable gasoline-powered models to fit your plant's specific needs. Three types, nine models . . . capacities from 5,000 to 18,000 pounds. Consult ROSS . . . it will pay dividends.



SCOOP ATTACHMENT*

Permits lift truck to efficiently handle coal, sand, snow and other loose materials. Controlled from driver's position. Easily attached and detached. Fits all models . . . Other attachments include ram, snowplow, side-shifter, slope-piler, etc.



ROSS INDUSTRIAL CARRIERS

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mination of the number of legs depends on the weight and size of the load, and the means of transportation.

As the number of legs increases, the number of pounds which may be safely lifted at a given angle of inclination also increases. For example, a 3-leg increases 25% and a 4-leg increases 50% over 2-leg slings.

Production Suggestion

Greater speed in handling by means of chain slings placed around lifts resting in temporary storage should also be mentioned. This practice is followed where lifts are frequent and the volume handled is large. Since the tiered loads already have the slings attached, there is no waiting time when the crane starts moving the loads from storage. New lifts placed in the racks are left with the slings in place for subsequent crane handling. The additional investment in chain, it is felt, is more than offset by the time saved in production and/or shipping.

An example of this practice is in a steel mill operation. A large tonnage of tubing is transported regularly a distance of several miles between two plants of the mill. All lifts are placed with chain slings in the gondola cars so that quick unloading may be accomplished at destination. Because the bales are kept intact by the chains, identification of the various units is established and this is maintained through the steps of subsequent processing.

It is recommended that chain manufacturers be consulted when purchasing slings for special handling operations under particular conditions of manufacturing. Such forethought will avoid using slings of relatively low tensile strength for loads that are too heavy, or work hardening, or slings that are unnecessarily heavy for a given job requirement. The choice of the proper slings for the job will contribute to maximum efficiency from the crane or hoist on which

they are used, and also to the safety of the workmen.

Care and Inspection of Chain—Safety Factor

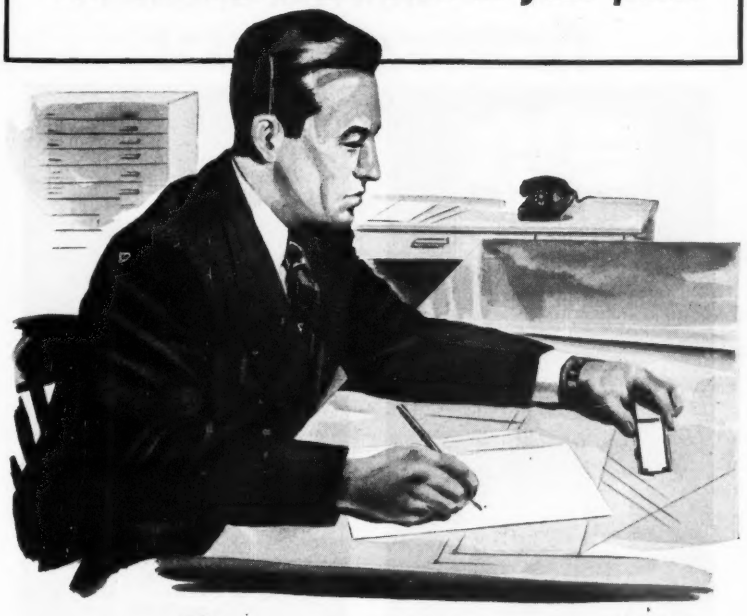
Periodical inspections and proper storage are very important in conserving the life of the sling as well as in promoting a safe operation. See Table 4 in National Safety Council Pamphlet No. 98 for reduction of rated capacity of chain due to wear.

Manufacturers list the following points to follow for proper servicing of chain slings. 1. Chain should be cleaned and inspected thoroughly at regular intervals. 2. A preliminary examination may be given by hanging the chain in a vertical position. If not distorted, it should hang reasonably straight. 3. Diameter of the links should be checked against original diameter, also length of link against length when new. Stretch of link indicates overload. 4. Chain should be inspected for bent links, cracks, scores or other markings, and corrosion pits. 5. In addition to the links proper, rings, pear and oblong links, and hooks should be carefully examined. 6. Hooks should be checked with regard to any increase in the size of the opening.

The Job Determines Type of Sling

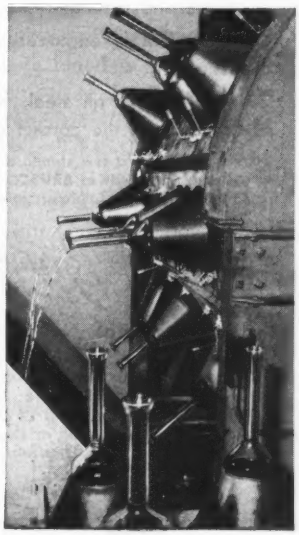
In conclusion, the following points should be kept in mind with regard to the choice of the chain and fittings used. 1. Iron chain is designed for use when sharp drops and jars are encountered, steel chain when working under hot conditions and/or with acids, or when frequency of operation makes high tensile chain desirable. 2. The type of load determines the way in which the sling is to be used—as a cradle, choker, or with hooks. 3. The weight and size of the load governs the number of legs used and the angle of inclination. 4. Different hooks may be used, depending on the manner in which the load is handled. Study of tasks which the sling must perform and proper care will be rewarded with

You can have this man *in your plant*



HAS A THOUGHT like this popped up in your mind at one time or another?—I wish we could have a man come into our plant on a temporary basis for a few days, possibly a couple of weeks—to sort of look over the way we handle material and process our work and see if our methods could be improved upon—an experienced, practical man with a good background—one who can come up with the right answers—and show us how actual savings could be made to produce at less cost.

Well,—you have just made a contact with that kind of man. We will lend-lease him to you. He will take hold of your material handling problems and quite likely come up with some ideas that can be turned into definite manufacturing advantages. Make an appointment with him today; phone TWinbrook 2-3040 or write *Allied Steel & Conveyors, Inc., 17314 Healy, Detroit 12, Mich.*



Settling Conveyor—designed to apply phosphorus deposit to television tubes. It virtually eliminates screen defects, breakage losses, and increases production—another Allied Specialty Engineered Installation.

CONVEYORS AND CONVEYOR SYSTEMS—*designed, fabricated erected—or present systems remodeled and rearranged.*

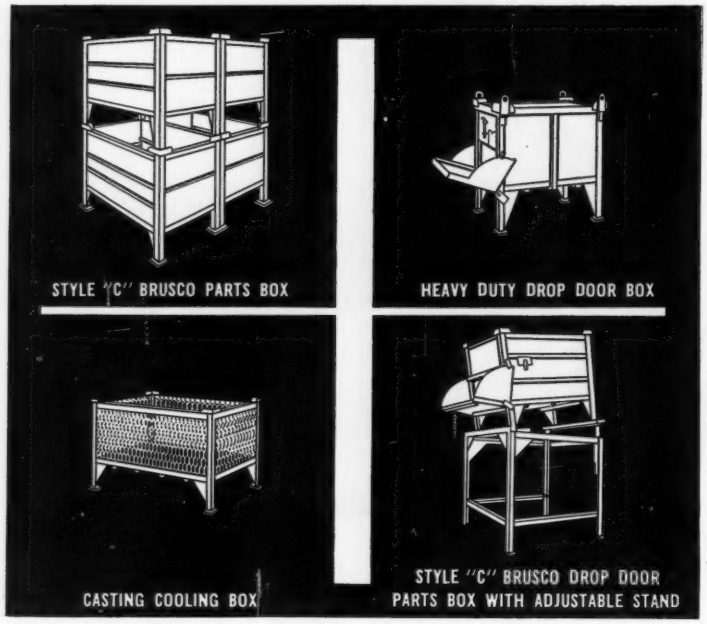
ALLIED DOES THE WHOLE JOB . . . from beginning to end!

IS YOUR PLANT

HANDLING PRODUCTION PARTS

WITH PEAK EFFICIENCY ?

Let **BRUSCO** show you how to hang on to parts handling dollars that you may be losing.


STYLE "C" BRUSCO PARTS BOX
HEAVY DUTY DROP DOOR BOX
CASTING COOLING BOX
STYLE "C" BRUSCO DROP DOOR PARTS BOX WITH ADJUSTABLE STAND

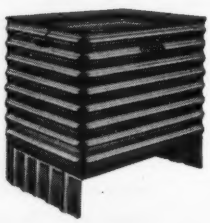
1. **BRUSCO** saves all kinds of valuable space when it comes to handling and storage. Units are easily stacked or tiered to make full use of vertical space, leaving more floor space for production work and machinery.
2. **BRUSCO** is engineered to work with every method of material handling.
3. **BRUSCO** is all steel, welded for strength and rigidity and fabricated with the correct gauge to meet your handling requirements.

Shown above are a few standard items of the **BRUSCO** Material Handling Line. These and many other units of **BRUSCO** equipment can be built to fit your particular handling conditions. *Write for full information. If you have a handling problem, let* **BRUSCO** *beat it.*

HERE'S A Brusco BUY!

Parts Box No. 524

A standard parts box with 14 gauge corrugated steel body and 7½" underclearance, 26" wide; 36" long; 26" deep. Loads up to 3000 lbs. with 14 cu. ft. capacity. Tiering plates and/or crane lugs at slight additional cost. *Available in special sizes.*



DELIVERY IN 30 DAYS **$26.50 each**

Brusco

HANDLING EQUIPMENT

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long and efficient service, and greater safety.

(Flow acknowledges with thanks the cooperation received in the preparation of this article from the Chain Institute, Inc., Chicago.—Ed.)

NEWS FROM THE SALES FIELD

THE Harold G. Taylor Co. has moved into new quarters at 4023 Upton Ave., Toledo 13, Ohio. The new structure includes a warehouse, display rooms and offices. Products handled include powered industrial trucks, floor and die trucks, sheet and strip handling equipment, conveyors, skids and pallets and drum, barrel and carboy handling equipment. The firm is headed by Harold G. Taylor. Other officers include Edna E. Taylor, secretary and treasurer, and Gerold R. Taylor, assistant manager.

P. W. VOSS and Associates, 918 South Michigan Ave., Chicago: This firm has been named a representative for the Automatic Transportation Co. of that city. It will handle Automatic products, including Skylift and Transporter material handling trucks.

GRANTRUCK & Caster Corp., 848 Ninth Ave., New York City 19: it has been appointed representative in the New York city area by the Revolvator Co., North Bergen, N. J.

NORTHEAST Industrial Equipment Co. Inc., Cambridge, Mass.: This company has been named representative for the Hyster Co., Portland, Oregon. It will handle sales and service for the Hyster line of lift trucks, straddle trucks, mobile cranes and attachments. Territory includes Maine, New Hampshire, Rhode Island and 10 counties of Massachusetts. The distributing firm is headed by Maurice Hussey.

WELD-BILT Sales, Inc., Wisconsin distributors for the West Bend Equipment Corp., has opened offices at 1713 N. Water St., Milwaukee. Organizers of the new distributing firm are J. C. Klumb, president; A. R. Heidner, vice president; L. F. Kraft, secretary-treasurer. In addition, the firm will represent the Island Equipment Corp., Long Island, N. Y.

A. W. HOOPER, 7 N. 55th Place, Birmingham, Alabama: it has been appointed representative for the state of Alabama, by the Mobilift Corp. Announcement was made by T. H. Skeel, southern division manager of the fork truck manufacturing firm.

NEW DISTRIBUTION METHOD FOR RAILROAD TIES

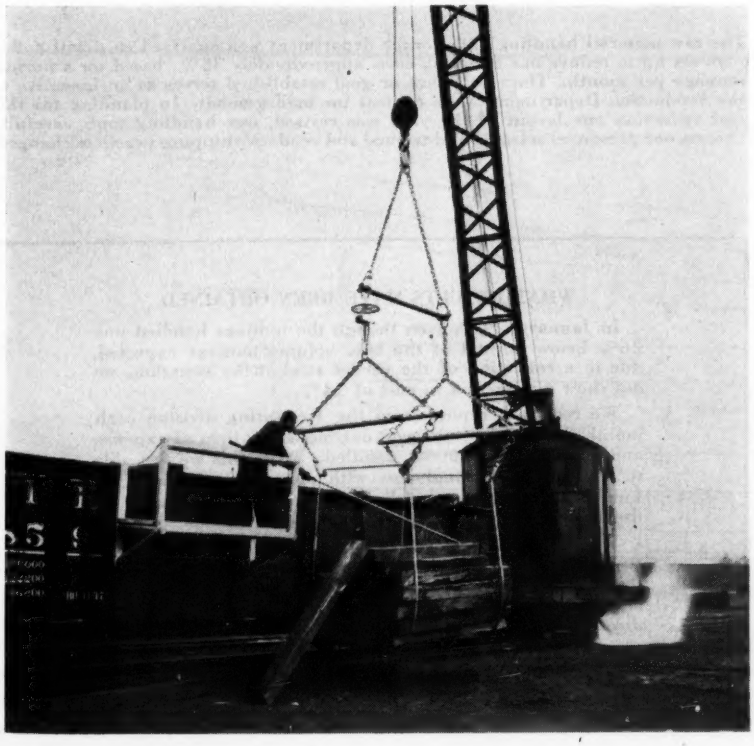
Steel Strapping is the key to the package, which makes this economical method possible.

SHOWN is a new method for loading, unloading and distributing railroad ties that greatly speeds these operations and cuts costs as much as 30 per-cent over existing methods. Long an expensive operation to the roads and treating plants, distributing ties requires back-breaking labor and is a slow process. Rising costs during the past decade have made it almost mandatory that a speedier, less costly method be devised.

The new method involves the placing of slack heavy-duty strapping on the tram loads of ties at the treating plants. All subsequent handling is accomplished by using the strapping as slings, similar to the methods employed in loading the hold of a ship. This permits unloading along the right-of-way by two methods. An entire tram load of ties can be lifted from the car and placed on the subgrade at any designated point. An entire car, six bundles, can be unloaded by this method in approximately 15 minutes.

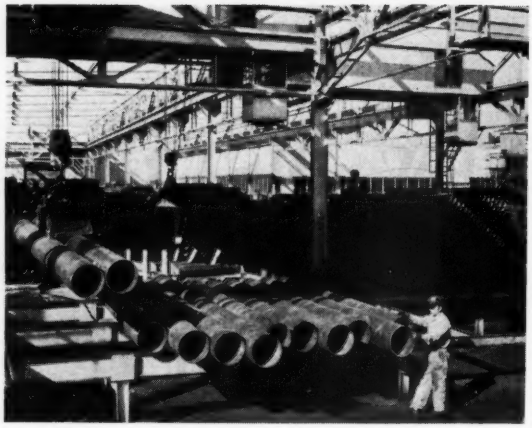
THE TIES ARE REMOVED from the bundle individually by an operator standing on the catwalk. The amount of slack in the band and the double spreader lessen the chance of the ties binding.

Courtesy, Brainard Steel Co.



Using a special lift, a tram load of ties is lifted from the car and suspended alongside the car just above the roadbed. As the train proceeds through the distribution area a man, stationed on a catwalk affixed to the side of the car, pulls one tie at a time from the bundle. The ties drop parallel to the rails and can be made to fall as close to or as far away from the stone as desired. It is pointed out that this method eliminates "hidden" costs of haphazard distribution which frequently found ties strewn down the side of fills or into ditches along the right-of-way.

Either of the two methods described requires only two men in the car, which results in considerable saving. The strapping, double crimped with a patented formed crimp, provides ample safety factor in the handling. A perfectly sealed strap will carry a beam load of approximately 14,000 lbs. Estimates figured costs for the average unit, including material and labor, at $2.24.



Bridge crane depositing lift on ramp, showing transfer table at center of view.

By M. T. WAKEFIELD
Cost Engineering and
J. O. KOUNS
Material Handling Manager
Tube Turns, Inc., Louisville, Ky.

YARD HANDLING with a COST GOAL

The raw material handling and storage department was analyzed in detail and a plan set up to reduce our handling costs approximately 35%, based on a normal tonnage per month. The cost figure or goal established serves as an incentive to the Production Department and a control for management. In planning for this cost reduction our layout of the yard was revised, our handling tools carefully chosen, our personnel selected and trained and vendors' shipping practices changed.

TUBE TURNS, INC., manufacturer of fittings for pipe welding and producer of forgings for industry, uses many thousands of feet of tubing in practically every known diameter and of numerous alloys, as well as plate stock and bar stock for drawing and forging. The storage yard for these materials and the handling facilities are planned for a normal monthly tonnage based on a long term sales forecast. In order to meet the 35% reduction in handling and storage cost that is our goal, the expected tonnage must be handled each month in order to absorb our fixed costs. Having a goal, however, always gives management a means of control, and the operating department has a check on its efficiency even if the expected tonnage is not reached, or is exceeded.

Plan for Cost Control and Cost Reduction

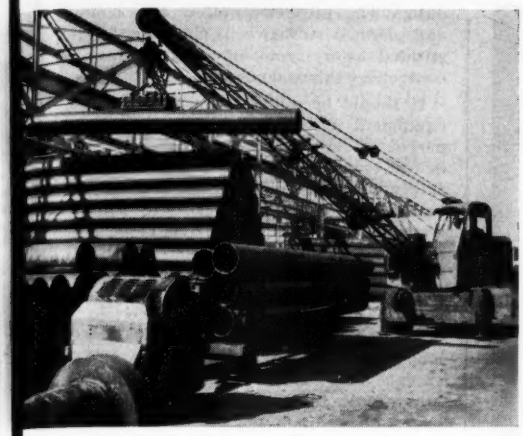
Because of the heavy tonnage of numerous varieties and sizes of stock, one of our chief costs is material han-

WHAT RESULTS HAVE BEEN OBTAINED

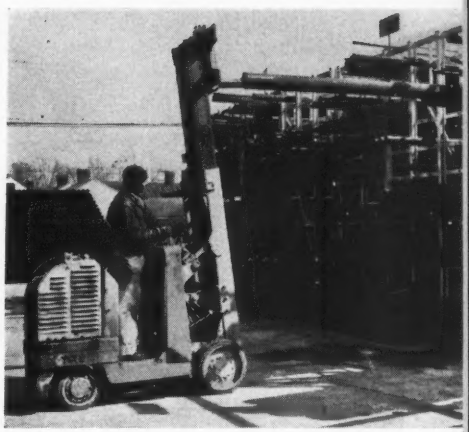
In January, 1950, even though the tonnage handled was 36% below normal of the base volume tonnage expected, due to a reflection of the earlier steel strike situation, we did show a reduction in cost of 14%.

We receive a report from the accounting division each month showing how we spent our money by item of expense and our cost per 1,000# handled. From this we are able to compare our actual cost with our standard cost. We know when we get out of bounds, and why, and then take the necessary steps to correct the bad condition.

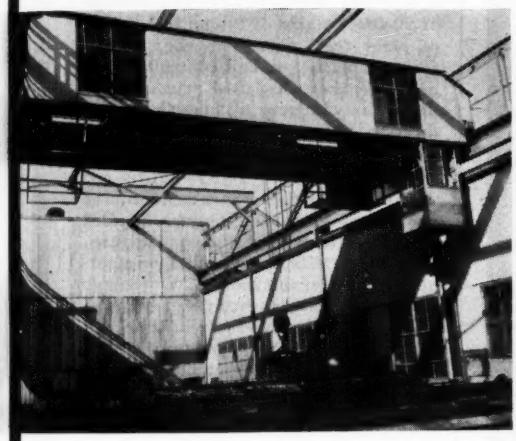
We have no doubt that our goal of a 35% reduction in costs will be realized under normal condition. To reach this goal, we must handle a total of 6,660 pounds (3,330# received and stored and 3,330# into production) for each direct manhour in the yard. We know we can do this because we have studied our operation and made plans accordingly.



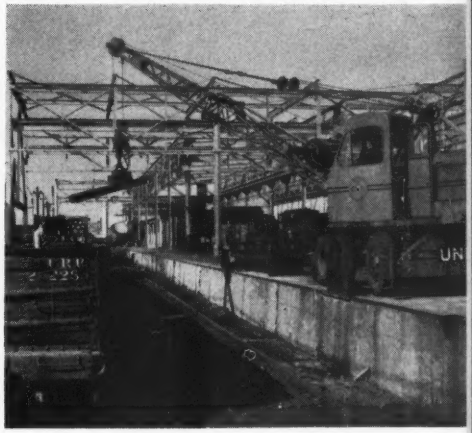
◀ Tire-mounted crane stacking tubing from buggy on high stockpile.



Ram truck removing length of tubing from upper bin in storage rack. ▶

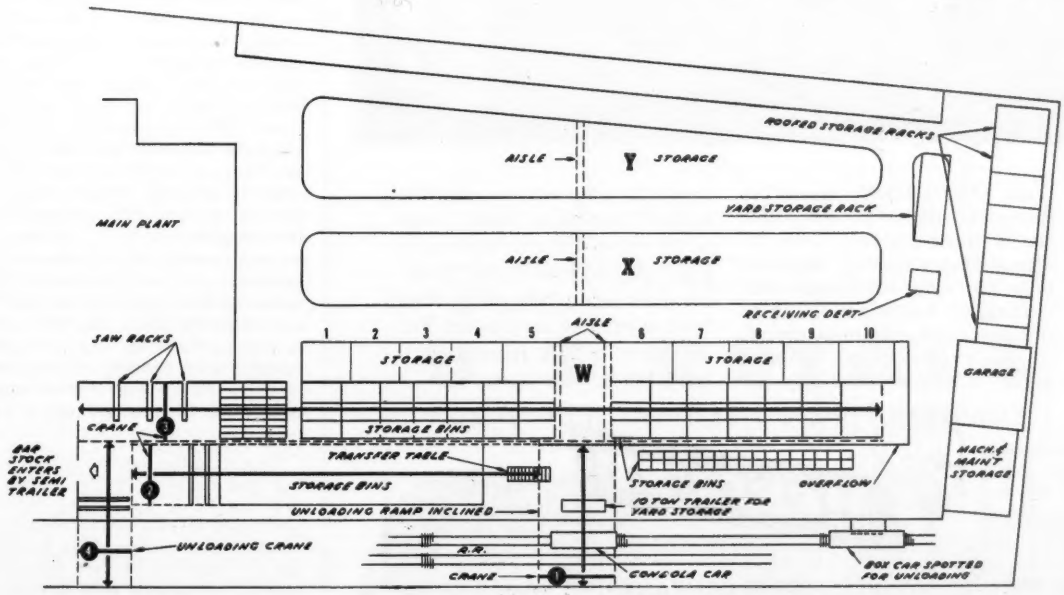


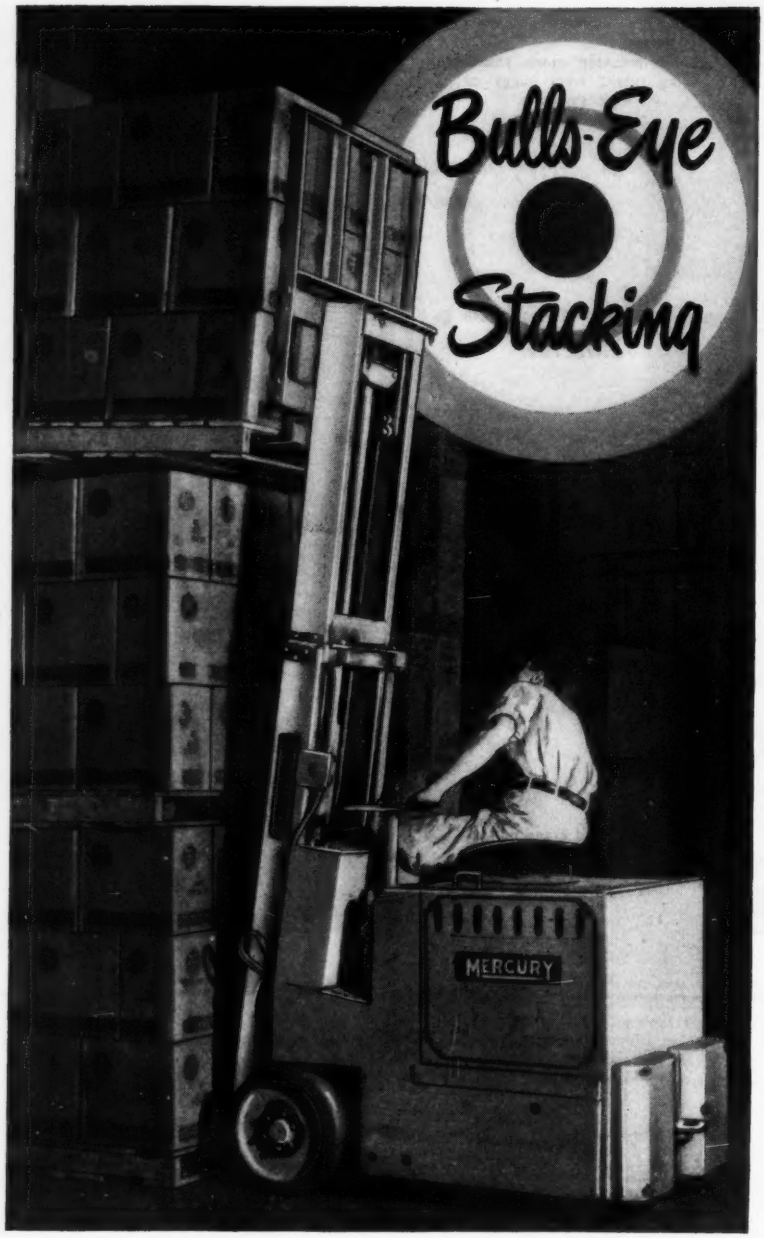
◀ Bridge crane delivering to saw tables, showing housing over crane.



Tire-mounted crane unloading pipe from gondola at south end of dock. ▶

This is carefully planned yard layout with handling facilities. Section "W" is typical storage location.





THE MERCURY "Jeep" is the most compact sit-down fork truck made for full 2,000 lb. rating. Has a turning radius of only 65", over-all length (including 30" fork) of 97". Can be quickly and easily maneuvered in narrow aisles and confined areas. Excellent visibility for operator and simple controls make it possible to "spot" loads with exceptional accuracy. Light weight makes the "Jeep" ideal for operation where floor load capacities are limited. For complete details request Bulletin 195-3.

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TRACTORS
TRAILERS
LIFT TRUCKS

THE MERCURY MANUFACTURING COMPANY 4154 S. Halsted St., Chicago 9, Ill.

dling. The present handling program and planned storage was therefore instituted as a means of reducing and controlling this and other costs.

It should be noted that our present equipment and layout evolved over a period of several years with each step being taken toward more ease and safety in material handling. Primary handling tools in the yard are four traveling cab type bridge cranes of 5 tons each as shown in the accompanying photos. They consist of two adjoining runways arranged parallel and running in a north and south direction, one 330 feet and the second 190 feet long, plus two unloading cranes, one at each end of this layout, operating in an east to west direction. These latter unloading cranes extend over the double track railroad siding which runs the length of the yard. The two cranes running north and south have storage bins under them suitable for storage of 20-foot lengths of tubing to a height of eight feet. These traveling bridge cranes replaced pendant-controlled type of cranes that were used primarily for unloading with very little storage space directly under them. This required hauling, by winch truck, all tubing to permanent storage in the yard.

The new bridge cranes reduced the amount of material that was handled by winch truck to the open yard area for storage. There was still a considerable amount of this hauling. Our rough cinder type roads caused delay and high maintenance cost on equipment as well as very poor working conditions during bad weather. One of our big improvements to ease handling and increase safety was the paving of roadways with 8" reinforced concrete and allowing sufficient width and turning radius for our equipment. With good roads, it was time to consider new handling equipment to replace worn out winch trucks and a very short boomed crane. After study of several types of equipment, it was decided that a 5-ton tire mounted mobile crane with a 30-foot boom would best serve our purpose. We had already equipped our bridge cranes with magnets to allow more rapid handling of tubing and for a safer operation. With the magnets, the men do not have to handle the tubing when in the cars or in storage operations. It followed that our mobile crane should also be equipped with a magnet to ease the handling in yard storage. This magnet operates from a separate motor generator set and the crane can be moved to any location in the yard when carrying a full load. The 30-foot boom is in 10-foot sections and its length may be adjusted if required. It is necessary, however, to use the 30-foot length at most times to stack as high as we find necessary.

To obtain the most benefit of unloading and stacking by the mobile crane and not tie it up hauling tubing, we purchased several 10-ton capacity solid rubber tired trailers. The trailer beds are 3½ feet by 14 feet and have removable standards that are 30 inches

high. These are loaded at the railroad siding and hauled to the storage location by fork truck or tractor where material is stacked by the mobile crane. These trailers are also used to haul long lengths directly to the loading area of the production presses. This avoids an extra handling that was required when the winch trucks had to leave the tubing outside of the building.

About this time it was found through a study of our maintenance costs that the bridge cranes had high maintenance costs and were frequently down for repairs when most needed, particularly during inclement weather. To overcome this condition, a weatherproofing program was begun to cover the bridge and trolley wires. This program has aided in reducing maintenance and down time on the cranes in bad weather. (We were unable to get outside cranes at the time these were installed.)

Development of Layout

With storage facilities for a great deal of material under the bridge cranes, concrete roads in the open yard area and new mobile crane equipment, F. W. Wagner, Jr., our production planning manager, suggested a study of the layout of our 100,000 sq. ft. yard area in order that we obtain full utilization of our equipment and further reduce our handling and storage cost. At this time, a storage pattern had been roughly maintained and certain alloys kept together, but it was unavoidable that some sizes and types would be located in several places. This caused a loss in time in finding the material, more difficulty in handling. Also, smaller pyramid stacks consumed more area. The study that resulted in our present planned storage for each size and type of tubing included sales forecasts, economic purchasing quantities as well as a study of available space and equipment. Well over a year elapsed from the start of the planning until the completion of the physical layout in November of 1949.

Each size and type material required by our plant was analyzed as to its requirements for average usage in tons, the maximum expected to be stored and a normal storage quantity. (There was not sufficient room to store the maximum quantity of each size so a "normal" was determined by size and permanent storage allowed for the expected normal. Using a normal quantity for permanent storage area requires the use of a general overflow area where the overstock of any size is stored when it is at maximum.) For those sizes of tubing used in the greatest volume, we planned storage areas under the bridge cranes in order that less handling would be required on our high production items, and they would be quickly available when required. On the other hand, there are many sizes and alloys that require only a small amount of storage area. Some of these deteriorate in weather or are easily damaged, i.e. stainless steel, copper, and aluminum. Some of this material is required only

Why Do Maintenance Men Go for U. S. Innacush?

Sales soar as more and more maintenance foremen praise the superior performance of this unique cushioned solid tire. The answer is simple—with U. S. Innacush, money and manhours spent servicing and repairing industrial trucks have reached an unprecedented new low!

Look What You Get with U. S. INNACUSH:

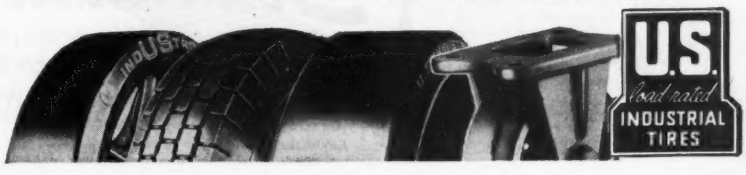
- ★ **Maximum vibration dampening *with* minimum rolling resistance.**
- ★ **More sharp lug surfaces for efficient traction and easy steering.**
- ★ **Greater tread thickness for long service.**
- ★ **Cut-resistant tread compound all the way through.**
- ★ **Higher carrying capacity.**
- ★ **Reduced maintenance costs; from oil lines to steering gear.**
- ★ ***Definite* reduction in operator fatigue.**

U. S. Innacush is available in a complete range of sizes for almost every industrial truck, and is only one type in a complete line of U. S. Industrial Tires ready to serve your materials handling needs.

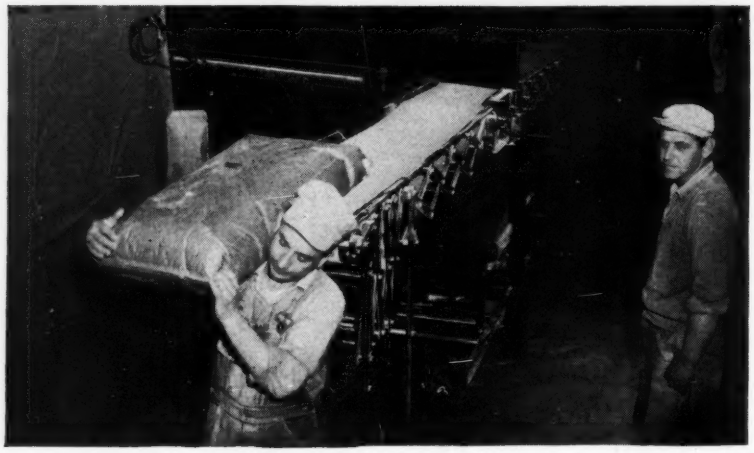
Your U. S. Royal Distributor can show you how the U. S. Innacush and the entire U. S. Industrial Tire line will save you money, and how his on-the-spot service will cut your "down time" costs. He's in the Classified Telephone Book—call him today.

U. S. ROYALS

***Products of* UNITED STATES RUBBER COMPANY**



Costs cut and HANDLING VOLUME INCREASED 7½ TIMES with Standard Conveyors



Another STANDARD CONVEYOR Cost-Saving Report

...From 40 bags handled per man-hour to 200 bags handled per man-hour

Conveyors speed operations — cut costs. Here is a "case history" from the report of a Standard Conveyor user.

The Operation:

Handling 100 lb. flour bags from fillers into railroad cars.

Handling Methods Compared:

Using hand trucks—40 bags (4000 lbs.) moved per man-hour.

Using a conveyor system for carrying the bags to the cars — 100 bags (10,000 lbs.) moved per man-hour.

Using a conveyor system for carrying bags to railroad cars and a Standard Portable Extendoveyor (as shown in picture) in cars—200 bags (20,000 lbs.) moved per man-hour.

Increased Productivity:

2½ times using conveyor belt system only. 5 times using conveyor belt system and an Extendoveyor in cars.

Conveyors cut costs—speed operations — can do the same for you. Standard builds conveyors to handle "packages" of all types—bags, boxes, bundles, barrels, drums, cans, cases, cartons. Available in light, medium, or heavy-duty types — portable or stationary — systems, sections, self-contained units — power or gravity fed — yield remarkable savings in time, money, and manpower.

Check your handling problem with Standard.

Write for Standard's general catalog No. FL-60. Tell us what you want to handle or type of conveyors on which you want information.

GRAVITY & POWER CONVEYORS

STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minn.

Engineered Systems — Portable Conveyor Units — Spiral Chutes — Pneumatic Tube Systems

in one length at a time or only a few feet. Eight storage racks, 20 feet long by 13 feet high and 14 feet deep, with 90 openings each, were designed to allow storage of these and other small usage tubing. These racks have four sizes of bin openings to accommodate different quantities of tubing. These racks reduced the number of sizes and types of tubing stored on the ground along the roadways and had the effect of making more storage space available for larger size tubing. Some of these racks were placed under cover at the south end of the yard and others placed in the yard proper. The smaller tubing that is seldom used is stored in the smaller bins at the top of the racks.

Since three types of stainless steel tubing are carried in stock it is very important that these types be kept separate. A color code system was adopted through our employee suggestion plan that provided for painting the face of one rack red, one green and one black to identify the type of stainless steel that belongs in that rack. The end of each piece of tubing is painted the same color as the rack in which it belongs. In this manner any misplacement of a piece of stainless steel is immediately evident. In fact, it has never occurred as each piece is painted as received and checked. If any is cut off a length, it is cut from the unpainted end. By use of the racks and storage shed this and other costly material is protected from the weather, stored in a small area, and segregated in as foolproof a manner as possible.

A survey was made to determine if special handling equipment was needed to handle tubing in and out of those rack openings that are from 6 to 13 feet from the ground. Since the slower moving sizes were placed in the high racks, it was gratifying to find that one week only 37 man minutes were used for withdrawing stock and only 45 minutes required the next week. Based on this information, it was decided that no special equipment need be purchased.

After the layout of material under the crane was complete and those types and sizes suitable for rack storage determined, the balance of the sizes and types was planned for storage in the open yard area along the roadways. An approximate number of inches along the road was determined for each size. Starting in section "W" as shown on the above sample layout, the larger size tubing was placed nearest the unloading and production area to reduce the handling of these difficult sizes. Each succeeding smaller size was stored in order throughout the yard. The yard area is laid out by area and sub-area as shown in the layout of area "W" in the illustration. This same pattern is followed for areas "X," "Y" and "Z." These stacks in the yard are stored on creosoted railroad switch ties. The ties are drilled with a 2⅛ dia. drill and 2" dia. bar stock is used as chocks to retain the pyramid type stacks. These pins can be changed easily for changing require-

(Continued on page 53)

OFF-BEARING CART . . .
(Continued from page 25)

production handicap of some magnitude. The maximum weight of a 60 in. pipe, for example, is 5280 lb. net, to which must be added 1400 lb. for the weight of the form. The combined efforts of four men were necessary to handle a pipe of this diameter from the machine to the kiln.

Walkie Is Combined With Cart

In an effort to offset this production handicap, we aided in the development of a powered off-bearing buggy by combining with the traditional manual model a 6000 lb. capacity hand-guided walkie of the platform type. The main modification made on it was to cut off the platform for purposes of attaching it to the buggy. Attachment lugs were welded to the frame of the walkie, which permitted the power unit to be bolted to the rubber-tired off-bearing cart. Because of the weight of the loads involved, this machine has been developed for the larger diameter pipe, from 21 ins. up to 60 ins. The sizes below 21 ins. are propelled in the customary manner with the manually propelled models.

The assemblies of the lifting and lowering mechanism and controls are made identical on each side of the cart, in a dual arrangement designed for easy manipulation of the loads. These assemblies include (on each side of the cart) a one HP motor, an oil gear pump, and an hydraulic cylinder of ample capacity. The motors on the cart are powered from the storage battery, for which a plug-in connecting system is used. The usual controls for travel are on the handle of the walkie.

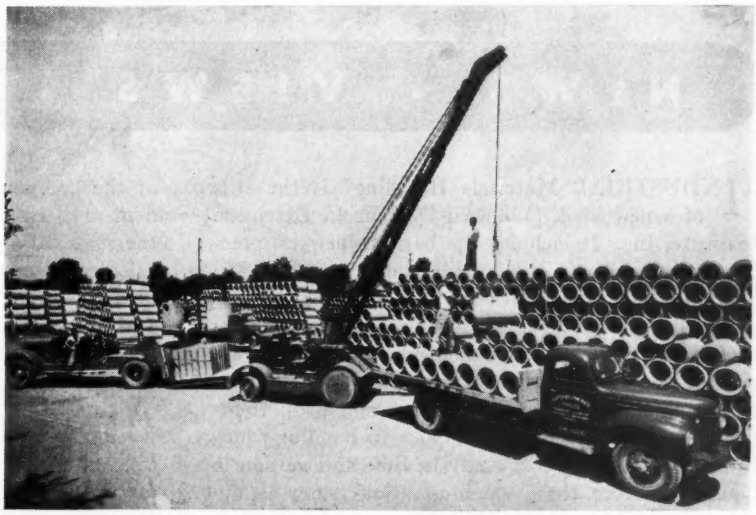
The controlling element for the lifting mechanism is a lever mounted on each side of the power unit (A). In operation, the powered cart is run up to the form at the pipe machine. Lining up arms on each side of the cart position it for engagement of the lifting arms. The lifting controls are then actuated to lift the form. The rate of lift is approximately eight ins. in three seconds. Using the standard control on the walkie handles, the operator runs the load to the drying room. One man transports a 60 ins. pipe totaling to a gross weight of 6780 lb. without exerting himself. The machine paces the operator.

In the kiln, the operator presses the dual release control on the cart (E) for lowering the load. After the pipe has been removed, the empty form is picked up in the same manner as the loaded unit for return to the processing machine.

A feature is that the width of the off-bearing cart can be adjusted to accommodate pipe from 21 ins. to 60 ins. in diameter by loosening four cap screws and moving the attachment lugs to a wider spacing.

"A Satisfactory Answer"

The combination cart-and-walkie was put into service in the spring of 1949. It has been found a satisfactory answer to the dual problem of how to handle large-diameter pipe in less time and without physical strain. This has been a problem of long standing in the concrete pipe industry. A number of different solutions have been tried with varying degrees of success. We believe this is the first time that a walkie platform type truck has been combined with an off-bearing cart to form a single unit for operating purposes—one which can nevertheless be quickly separated if it should be necessary to attach the power unit to another cart.



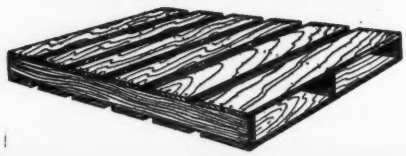
TIRE-MOUNTED CRANE is big factor in fast, safe yard operation. It does all stacking, shipping. Yarding truck is shown at left of the crane.

The battery of the walkie is charged every evening by plugging it into a fully automatic single circuit charger. The machine is thus constantly available for operation during the day.

At a conservative estimate, the power driven off-bearing cart has been responsible for a production increase of 20 per cent, which will pay for the equipment in a year.

Yard Handling Must Match In-Plant Handling

The plant is located at one end of a rectangular area approximately four acres in extent, and the maximum distance of the haul from the kiln is 550 ft. The stacking is done (see exhibits) by a tire-mounted crane of 15,000 lb. capacity which is equipped with a 26 ft. boom. All yard areas are economically utilized because the material is stacked to a height of 14 ft. An open-end hook is used as a lifting accessory. For the larger pipe, dual hooks are employed to provide the necessary support.

ON THE  PALLET

NEWS • VIEWS • TRENDS

"INDUSTRIAL Materials Handling" is the title of a new book published by Lincoln Extension Institute, Inc. It includes the basic principles, practices, equipment, and applications of material handling. The book is designed for industrial personnel, colleges, universities, technical institutes and professional societies. Included among its topics are a basic equipment outline with emphasis on all types of equipment and their application and uses; treatment of plant layout as it applies to handling; how to make a handling cost analysis; time and motion in handling. More than 100 illustrations show equipment, procedures and applications. Data for this book was compiled by Curtis H. Barker, Jr., Lamson Corp., and revised and rewritten by Irving M. Footlik, Charles F. Yarham, and J. Francis Carle. It is priced at $4.75 and is available from Lincoln Extension Institute, Inc., 1401 West 75th St., Cleveland 2, Ohio.

DON W. KELSEY, material handling engineer of the Union Steel Products Co., Albion, Mich., will fly to England in June to attend the British Material Handling Show to be held in Manchester, June 6-17. Kelsey will visit various English plants to compare British handling methods with those in American factories. He will also study the curricula in material handling offered in English universities. Kelsey has been active in the field of material handling for many years both as a consultant and development engineer.

SHERMAN Paper Products, Newton Upper Falls, Mass., has announced that plans are now being considered for a branch factory in the Chicago area. The new branch factory will be the third in the Sherman group, the second being located in Los Angeles. It will produce Corroflex flexible corrugated packing material and corrugated specialties.

THE Mathews Conveyer Company, Ellwood City, Pa., has announced a change of address of its New York City office. This will now be located in room 402 Chanin Building, 122 East 42nd Street, New York 17, New York.

HENRY MARSHALL MILLER, chairman of the board of the American MonoRail Co., Lakewood, Ohio, died recently. Miller was one of the organizers of the company and headed the firm as its president until 1944 when he retired. He was a pioneer in the materials handling equipment field, having been sales manager of the Louden Machinery Co. of Fairfield, Iowa, up to the time he came to Cleveland in 1926.

A SERIES of regional sales meetings outlining company policies and programs for 1950 was recently launched by Towmotor Corp., Cleveland, manufacturers of fork lift trucks, tractors and materials handling accessories. The meetings were planned to bring Towmotor distributors, dealers and salesmen together to learn of new manufacturing and engineering developments taking place at the main plant, to hear important talks on current sales plans direct from company officials, and to see what is being done advertising-wise and product-wise. Speakers included C. E. Smith, executive vice president, Alfred H. Roth, advertising manager, Lee Daniels, chief engineer, and Dan Wessman, service manager.

THE production of paper from southern pine is rapidly becoming the chief industrial output of the South. While the textile industry, according to a survey, has been bemoaning the migration of its mills to the South, the expansion of the paper industry has gone practically unnoticed. In 1950 the paper industry in the South will employ nearly 120,000 workers, with a billion dollars invested in the production of a large part of this country's entire output of paper and paperboard. These mills, it is estimated, will pay over $100,000,000 this year to the owners of small woodland tracts for pulpwood.—*Courtesy, Paper News and The Paper Industry.*

A NEW attitude toward the mutual responsibilities of industry and colleges in the training of young engineers was urged in a recent talk by J. C. McKeon, manager of University Relations for Westinghouse Electric Corp. Speaking before a session of the 42nd annual meeting of the American Institute of Chemical Engineers in Pittsburgh, McKeon suggested that colleges should provide their students with a sound foundation of fundamentals whereas industry must provide the proper environment for the graduate by using a

(Turn to page 75)

MEN IN THE NEWS

APPOINTMENT of Lawrence J. Kline, a veteran of 30 years in the material handling industry, as sales manager of its Automatic Division has been announced by the Automatic Transportation Co., Chicago. Elmer F. Twyman, general manager, said Kline will direct sales activities for Automatic and Skylift trucks. Kline comes to Automatic from the Mercury Manufacturing Co., Chicago. Kline is a past president of the Electric Industrial Truck Association, the Caster and Floor Truck Association, and the Materials Handling Institute.

CHARLES R. Tyson, president of John A. Roebling's Sons Co., Trenton, N. J., has announced that Walter A. Huber has been appointed general manager of the Wire Rope Division. Huber will co-ordinate administrative and production work with merchandising schedules and customer requirements. For the past nine years, he has served as manager of preformed wire rope sales for the American Chain and Cable Co., Inc., and prior to that had served as assistant to the president and sales manager of the wire rope division of the Jones and Laughlin Steel Corp. He has been secretary of the Wire Rope Institute for the past 10 years.

Walter A. Huber

ALVEY CONVEYOR MFG. CO., St. Louis, engineers and builders of package-handling elevating and conveying equipment, has announced the appointment of C. H. Adamson as advertising manager. He has been with the company for the past four years as assistant chief engineer and has had wide experience in conveyor sales, design and manufacture.

C. H. Adamson

GOULD Storage Battery Corp., Trenton, N. J., has announced the appointment of F. A. Miller as Northeast regional manager and the advancement of Mal Janis to the post of New York district manager, the position formerly held by Mr. Miller. Janis has represented Gould in the New York City area for the past seven years. Miller is familiar with all phases of storage bat-

(Turn to page 72)

"Drive thy business — let not that drive thee."

—Ben Franklin's Almanac, 1757

These days thee must work a month for the taxgatherer before thee begins to work for thyself. Keep a firm hand on the wheel of savings to bolster thy "nett after taxes."

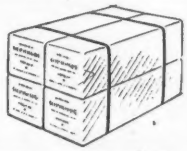
—Acme Steel's Notebook, 1950

How long, Mr. Comptroller, since you broke "Miscellaneous" down into its multitude of sins? Do it—and you may uncover profit leaks that are subtracting real money from the profit column.

Most companies find plenty of such leaks to plug in packaging, shipping and materials handling operations. Acme salesengineers are specialists in finding these leaks—then plugging them. In 9 out of 10 cases, we can point the way to greater efficiency and good, solid thrift with Acme Methods and Acme flat steel strapping, Acme stitching machines and wire, and other Acme Steel products.

We have already proved this for the more than 50,000 customers we now serve. Two specific cases are reported here. It takes just a minute to read them and call us in.

Acme sales engineers, technical facilities and nationwide service are ready to start helping you. Reach for the telephone and call the Acme Steel service office nearest you. (There are 46 of these offices in the principal cities of the U. S. and Canada.) Or send the coupon for details on your special field.



Old Way: $4.01 express charges
Acme Steel Way: $2.26 " "

Cash Saving $1.75 per bundle

By bundling 4 cartons with Acme Steelstrap, instead of shipping separately, Exola Products, Inc., of Los Angeles, cut shipping costs 43%.

Materials cost cut 87%
Time saved 30%

Yes, and production was increased, too, and stronger, better-quality packaging achieved when B&T Metal Co., Columbus, Ohio, put Acme Silverstitchers to work on their packaging problem.

ACME STEEL

You're invited to watch us roll out the strip steel when you're in or near Chicago. Our rolling mills at Riverdale, Illinois, covering more than 1,700,000 square feet, house one of the largest, fastest strip steel operations in the world.

ACME STEEL CO. CHICAGO

ATTACH THIS COUPON TO YOUR BUSINESS LETTERHEAD

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We manufacture_____. Please send me booklets on Acme Methods checked.

- ☐ Please have sales engineer call.
- ☐ **Packaging, Shipping, Materials Handling**—"Savings in Shipping" tells how to save money and safeguard customer good will with Acme Steelstrap.
- ☐ **Shipping (Carload and L.C.L.)**—"Acme Unit-Load"—The story of reduced damage claims and better handling for shippers.
- ☐ **Bag and Box Assembly**—"Profit by Stitching" demonstrates cost-cutting Acme Silverstitchers and Acme-Champion Stitchers.
- ☐ **Product Assembly**—"Acme-Morrison Metal Stitchers"—for savings in fastening metal-to-metal or metal-to-other materials.
- ☐ **Book Assembly**—"Acme-Morrison Book Stitchers" for savings in the graphic arts field.

NAME_____ POSITION_____

COMPANY_____

STREET_____

CITY_____ ZONE_____ STATE_____

ACME STEEL CO. CHICAGO

How "Caterpillar" Standardized On Containers

By W. NAUMANN,
Production Manager,
Caterpillar Tractor Co., Peoria, Ill.

PART II OF TWO PARTS

The engineering and organizational aspects of "Caterpillar's" new container program.

The Cheaper Tariff May Be More Expensive

In our entire handling system, the cooperation between material handling, traffic and purchasing is an accepted point of procedure; likewise, the receiving division has a voice in saying how material should be shipped. The one-time practice of the traffic department, when consulted as to a shipping method, was to compare two possible tariffs and then to choose the lower one. For example, the traffic department may be able to make a saving by changing from rail shipment to truck shipment, or vice versa. Traffic department operations in alert organizations have graduated from such simplicity.

At "Caterpillar," the traffic department will ask the material handling receiving section if a change is desirable—that is, if a lower freight rate will not perhaps be offset by higher material handling costs in the plant, to the extent where the transportation saving would actually result in a financial loss factor. By the same token, a change in a shipping method may entail a slightly higher freight rate, but a sizable saving in handling at the plant may make the move a profitable one.

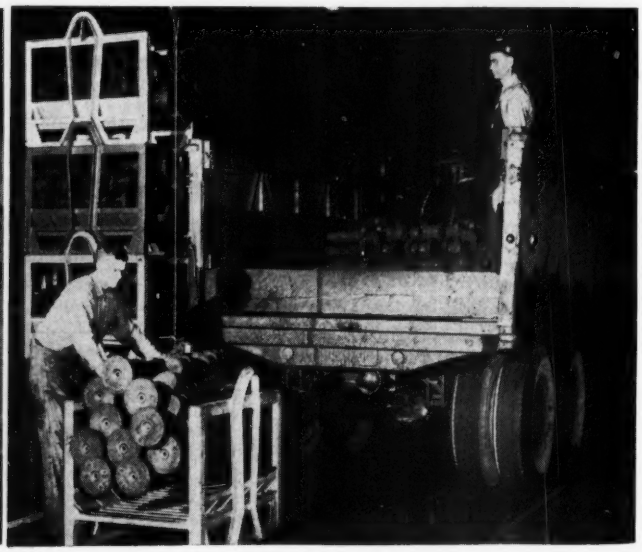
Here is a specific illustration. At one time crankshafts were received loose in rail cars; they had to be hauled some distance from the receiving point to storage. Today the crankshafts are received by truck, at a somewhat higher freight rate. The explanation follows.

The delivery truck is spotted in a location where unloading and storage can be performed within a 50-ft. radius. Another improvement is that the crankshafts can now be shipped by the vendor in bundles. The latter are secured with a wire sling which has a snap hook. When the crane places a lift in a tiering rack (now part of standard procedure), the hook is unsnapped and the material is ready for use. The vendor bundles the crankshafts according to the weight desired for subsequent handling in tiering racks through the factory.

The point is: while rail shipments

UNDERCLEARANCE OF containers is designed for handling by all power and manual type trucks.

BUNDLED CRANKSHAFTS are shipped at higher tariff because of greater economy in handling.



were at a lower freight rate, the higher tariff by truck is more than made up by the resultant handling economies. The known saving, based on time studies, is 80 per cent of the cost of the old method. This figure does not include the previous cost of the long haul from receiving to storage.

Paved Yards. Stock Arrangement

When our schedules increased to a point where we had to have more storage space for rough parts, it was decided we needed more storage yard area. Most of the latter were unpaved. Since we wanted our fork trucks to operate inside as well as outside the plants, moving the containers in an uninterrupted flow, a concreting program was launched that added acres of paved yards. Wherever possible, such yards were located adjacent to the first machining operations. This was the case particularly with large-volume items. The trucks move such load units—box, tiering rack or skid-pallet—directly from the stacks to the point of use in the buildings. The paved yards are suitable for all-weather operation. Power sweepers are available for snow and other inclement conditions.

A large-scale container operation demands other layout considerations. (We expect to have, ultimately, a total of 100,000 boxes, racks and skid-pallets.) Boxed items are concentrated in one area. The handling equipment can thus be "concentrated" as well; the vehicles will not have to travel unnecessarily. In large yard areas, unplanned stock layouts can quickly result in a heavy operating cost through excess vehicle miles.

Racked materials are likewise segregated. Frequently these containers hold long parts that extend several feet on both ends. While this form of segregation is largely determined by short hauls to the point of use, it also aids in maintaining a neat yard with uniform stacks.

Bulky items that are too large

THIS NEW FORK TRUCK
Operates
In Narrower Aisles
DIRECTIONALITY OPERATED FOOT CONTROLS
FOR TILT LOWERING AND TRAVEL
LEAVE BOTH HANDS FREE TO MANEUVER
USE THE NEW
LEWIS-SHEPARD
JFTT
"SPACEMASTER"
Compact design with proper weight distribution and rear wheel drive allow JFTT to pivot at center point of front axle... Also ideal in tight quarters and buildings of limited floor capacities. JFTT Makes Big Fork Truck Savings Available To You.
LOW FIRST COST
2 SPEEDS EACH DIRECTION
STANDARD LIFT UP TO 130"
LOAD LENGTHS UP TO 48"
FOR CAPACITIES OF
1000, 1500, 2000 LBS.
Write for Brochure
MULTIPLY MANPOWER
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The "MASTER" Line
REPRESENTATIVES IN PRINCIPAL CITIES

Fish, Flowers, Furniture

And food, forgings and fertilizer! Every working hour, these and hundreds of other products are handled efficiently and economically on cost-reducing, space-saving Rapistan Material Flow Equipment.

Among people who know handling equipment, Rapistan ranks first. The reason? . . . *supreme dependability.* Rapistan conveyors are designed to give trouble-free service long after most others have been replaced. Whether you need a single conveyor, or a complete "flow" system for product movement through processing, packaging, storage and distribution—buy Rapistan! It's profitable.

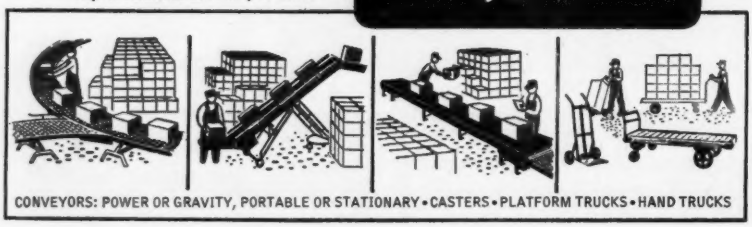
SEND FOR YOUR FREE COPY of "Rapistan Material Flow at Work!" See how carloading was cut from 80 to 8 man hours . . . a processor saved $200 weekly . . . how unloading costs were cut from $17.10 to $1.90 per car . . . and how Rapistan can work for you.

"Rapistan" and "Material Flow"—Trade Marks

The RAPIDS-STANDARD COMPANY, Inc.
196 Rapistan Building Grand Rapids, Mich.

Representatives in Principal Cities

Rapistan
MATERIAL *flow* EQUIPMENT



CONVEYORS: POWER OR GRAVITY, PORTABLE OR STATIONARY • CASTERS • PLATFORM TRUCKS • HAND TRUCKS

for containers are likewise concentrated in specific areas, where the handling is by crane truck. Stacks of these products are usually built close to our industrial railroad siding. Frequently a swing of the boom is enough to load the flat cars —without the need of travel.

Storage is usually by sections and bays. The location of the material is recorded on "location" cards in the stores office. When deliveries are to be scheduled to a shop, a ticket is prepared in the office to show the section and bay number. For example: Section B, Bay 4. The order filler is guided by this ticket, and the box or rack or pallet is delivered to the transportation facility indicated. This may be the industrial railroad or highway trucks.

"Mass" Movement. "Engine" Not On Tracks

A typical flow, inbound and outbound, may be observed in one of our larger yards. Castings are received by truck and rail car. After inspection, these items are hung on the paint conveyor which carries them through paint spray booths. The parts are thus sealed for protection in outside storage. From the delivery side of the line the castings are loaded in the proper containers. If the items are to be placed on skid-pallets, a definite pattern is predetermined for each type. Haphazard loading can mean accidents, or voids which are wasteful of storage space. If a question should arise as to the proper stacking pattern, the department's office has a file with a card for each item; attached to many of the cards are photographs which show the pattern to be used. Such photographs will usually be made in cases where it is difficult to definitely describe the pattern by any other means. In any event, the file is there for reference purposes.

From the loading area, the full containers are transferred to the nearby industrial railroad, which delivers to yard storage. The stockpiles are arranged so that the "incoming" cars can be spotted close

to the storage locations.

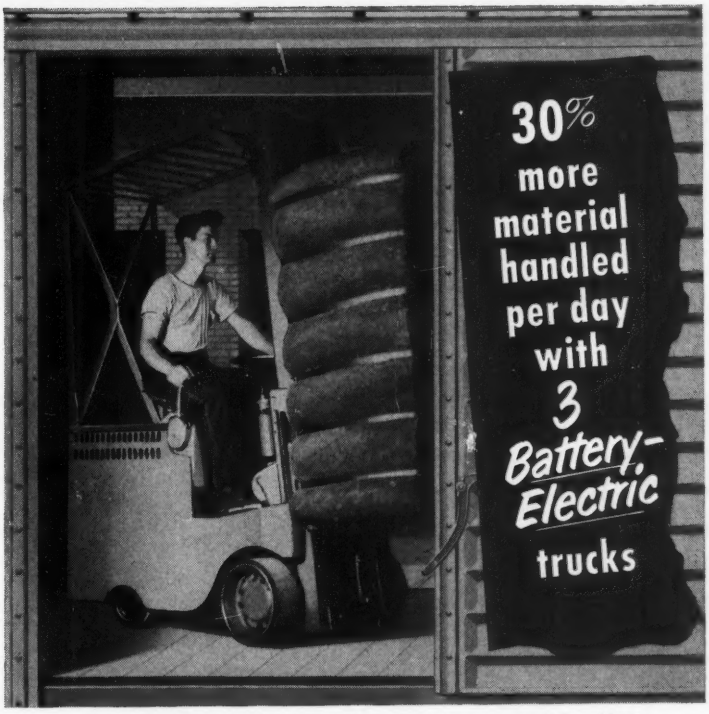
Fork trucks of 6000 lb. capacity handle the containers to and from the flat cars. In certain plant areas, hand-guided stacking type motorized trucks are used for this purpose.

For order filling purposes, a train of eight 38″ x 129″ flatcars will usually be loaded by two fork trucks in about a half hour. The fork trucks will pick off the scheduled quantities from the stacks and load materials "by the ton". It is interesting to note that "Caterpillar" does not use track-bound gasoline locomotives to power the trains, but pneumatic-tired industrial tractors. Visitors usually see the reason for this before a company representative has time to supply the answer. With rubber-tired tractors instead of rail-bound locomotives, a great deal of flexibility is introduced. Switching and transfer of cars is easily accomplished without extra switching track.

The industrial railroad does not reach all points of loading and unloading, particularly in the older sections of the plant where narrow areaways exist between buildings. However, this is no obstacle to the economical train operation which moves a large tonnage of heavy parts over considerable distances in short order. In such cases, a trackless trailer train is used, frequently on shuttle runs. The trailers of the tractor trains are likewise 38″ x 129″, and have rubber-tired wheels.

Maintenance Safeguards the Investment

Frequently a fork truck trailer train is used. Here is an example. Certain types of forgings are hauled by this method from receiving to a yard area where they are stored for heat treating. The fork truck trailer train will haul 12 boxes, or three trailer loads, at a time. The same fork truck operator loads the trailers, transports them, then stacks the boxes in the yard. Thus the containers tie in well with our



Battery-powered truck takes a load into a freight car to stack for shipping.

NEW ENGLAND WASTE COMPANY*
makes full use of warehouse storage . . .
freight car unloading is now
10 times faster

Three electric industrial trucks enabled The New England Waste Company to handle as much as 35% more material per day in its Charlotte, (N.C.) plant.

Man-hour time per car unloaded has been reduced 90% in time consumed per car, or an efficiency increase of 10 times over the former method!

More storage space has now become available without increasing floor area; battery-electric trucks can tier bales higher (and safer and faster, too) than under the old manual system. Workers are no longer exposed to this hazardous, back-breaking work.

Mr. George E. Lund, Plant Superintendent, says: "There has been an entire absence of truck down-time chargeable to operating failure, and maintenance costs have been almost negligible."

*New England Waste Company, Boston, with seven branches in the United States and England, purchases cotton waste and other fibres from textile mills, and sorts and rebales these fibres for further processing by other industries.

This is another example of why cost-probing, safety-conscious management buys battery-electric trucks.

THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION
3701 NORTH BROAD STREET, PHILADELPHIA 40, PENNA.

The BELL Prime Mover

Prime-Mover helps keep the plant clean. Bucket takes all kinds of scrap, large and small.

Bulky materials easily transported inside and outside the plant. Dozens of such jobs can be handled by the Prime-Mover.

YOU CAN KEEP THINGS MOVING with the PRIME-MOVER!

Gear driven—no belts or chains

Engine protected against dirt

Turns in its own length, 63½"; width 31½"

Converts from bucket to platform without tools

Eight hours continuous running on 3 gal. of fuel

Bucket holds 10 cu. ft.

THIS versatile machine is doing a remarkable job in many plants. It can do the same for you. If some particular problem of material handling is bothering you—the Prime-Mover can answer that one and additionally help in a number of other ways, too. This rugged unit works outdoors and indoors to keep things moving. Here is a labor saver that has cut handling costs as much as $36 a day. Send coupon. We'll send you complete information at once.

THE PRIME-MOVER CO., Muscatine, Iowa

THE PRIME MOVER CO., Muscatine, Iowa F6

Your Name.....

Company.....

City..... State.....

industrial railroad and trackless train system.

The many thousands of steel boxes, racks and skid-pallets in circulation indicate the need for a planned maintenance program. Metal is subject to corrosion, rusting and damage. Moreover, a regular maintenance program will assure longer life of the equipment as well as neatness of appearance. Good housekeeping is more easily enforced when the equipment is well maintained.

Plans being implemented are as follows. Repair work on containers will be done in a special shop equipped to do straightening and welding. In the tote box receiving area, facilities are being set up for sand blast cleaning and repainting. This type of maintenance work will be done as the need arises. The operation is set up for a regular flow of containers through this latter department. In short, the maintenance program will protect the investment. It is cheaper to maintain a container than to replace one.

Good Results Stimulate Improvements

We still have a long way to go until our container project will be completed. The replacement is continuing at a gradual, consistent pace. The results obtained in two years of operation have amply borne out the value of the new program. Among chief improvements thus far the following improvements stand out.

1. An improved supply function to our high-capacity production lines. 2. Better inventory control. 3. Faster and safer handling of the tonnage. 4. Better housekeeping because neatness is maintained with uniform containers. 5. Material flow procedures are expedited because of the flexible handling with all types of handling equipment, manual and powered. 6. Reduced damage and loss of materials. 7. Lastly, the new containers have given us a more effective use of overhead space, the increase being up to 33 per cent of the former method.

These results serve as stimulation to continue our research on the best stacking patterns for present and new parts; and in the meantime an equally comprehensive project is underway on our finished purchased parts. They are arriving increasingly in load units,—a program in which our material handling, purchasing, traffic and receiving departments are likewise working in close cooperation.

YARD HANDLING WITH A COST GOAL . . .

(Continued from page 44)

ments in storage of any size tubing as it is not practical to restrict a given size to an exact number of inches of storage. A savings can be realized if some of the area for the next size is used temporarily if its inventory is low.

When all material was assigned its normal storage requirement, an overflow area was obtained equaling about 20% of the area along the roadways in the yard. This is used to store the difference between maximum and normal of any size until it is used down to normal.

As shown in the exhibits, the ends of all tubing are squared when stacked to furnish a quick method for computing inventory and to improve appearance. As in any other field, we find that neat appearance promotes good housekeeping and safe practices. Also, by planning the even ends to face each other under the cranes we automatically obtained aisles through the craneways which facilitate taking of periodic inventories in this location and of identifying material.

Though most of our tubing is received by rail, some small deliveries are received by truck. It was the practice to unload trucks wherever an open space was available. This caused confusion and often material was not promptly checked and stored. The assignment of a truck receiving area which must be cleaned up each day has eliminated this condition and all material is promptly checked and stored in its proper location before it can be mixed or damaged.

Utilization of Equipment

With the material in its proper location and maximum use being made of the bridge cranes, it became evident that there were times when the large mobile crane with its driver and ground man were being used for obtaining a few lengths of pipe. Since a fork lift truck was available, it was equipped with a four-foot ram that will go inside a piece of tubing, lift it from the stack and deliver it quickly to the bridge crane for delivery to production or place it on a 10-ton trailer. In this manner one man can do the work that

Handling Work is STOP and GO...

It's an intermittent service in which battery industrial trucks have many natural advantages. They start instantly, accelerate smoothly, operate quietly, give off no fumes, and consume no power during stops.

★

Battery trucks "deliver the goods" with double dependability when they are driven by EDISON Nickel - Iron - Alkaline Storage Batteries. With steel cell construction, an electrolyte which preserves steel, and a foolproof electrochemical principle of operation, they are the most durable, trouble-free and long-lived of all batteries.

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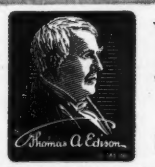
If you do not already use EDISON, get a current price quotation . . . you will probably find initial cost *much lower than you think*; annual operating cost *less than you pay now!*

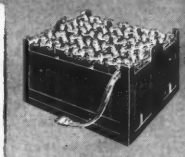
ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES: They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.



EDISON

Nickel • Iron • Alkaline

STORAGE BATTERIES



EDISON STORAGE BATTERY DIVISION

of Thomas A. Edison, Incorporated, West Orange, N. J.

In Canada: International Equipment Co., Ltd., Montreal and Toronto

LAMSON *Conveyors*

SPEED assembly line production.

SPEED flow of materials.

SPEED handling of finished products.

SPEED. That's the word that best describes Lamson Conveyors. In plant after plant, Lamson Conveyors — specifically applied for specific needs — cut materials handling costs at least 30%! And that's a saving. A *big* saving.

SAVE Wasted Effort... Handling Time and Valuable Floor Space.

In the large Westinghouse Home Radio Division Plant at Sunbury, Pa., the interlocking system of Lamson Conveyors eliminates bottlenecks . . . saves wasted effort . . . and many handling costs.

In the main illustration, radio receivers literally "roll" up to the inspectors on the lower conveyor line. After rigid inspection, they go to the cabinet section for installation and final inspection via the overhead Lamson Conveyors.

No wasted time. No wasted effort. No wasted footsteps.

***Mail* this coupon today for Free Booklet!**

Read how Lamson Conveyors can cut your handling costs up to 30%!

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Please send me further information about your CONVEYORS.

I am interested in moving _____
(Type of product or material)

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Position .....

Company ..... **Address** .....

was requiring two men with the bridge crane. Two adapters have been made to allow the ram to handle tubing from 1½" dia. through 18" dia. One is a small bar that is screwed into the end of the regular 3½" dia. ram and the other a piece of 8" dia. tubing placed over the 3½" dia. ram.

Records Result in Accuracy and Ease of Locating Material

We have found that the planned storage for each part has eliminated the requirement for an expediter whose function was to locate the required material and advise the operators what was to be moved. This function is now easily handled by the foreman of the department.

The entire yard was divided into areas as shown on the layout and to each rack, bin or portion of roadway a letter designation and a number was assigned. Each size tube is located on the layout in a specific location and a cross reference by tubing type and size is maintained showing the proper location for each size tube. This facilitates placement of tubing as it is received.

As material is received it is placed in its proper location and the receiving tally notes where each heat is stored. A perpetual inventory system is maintained on each heat of steel and on this card is recorded the exact location of that heat and size tube. There is no guessing or remembering where a piece or size of tubing is stored. The records tell where it is.

The layout and handling methods were designed for extreme flexibility in the flow of the stock. In a typical operation, Crane No. 1 will unload tubing from gondola cars. The lifts can be shunted in any one of several directions for a variety of production or storage requirements. For example, the tubing can be placed on the roller-type transfer table between craneways No. 1 and No. 2, to be picked up for storage in the stacks maintained in craneway No. 2. If the tubing is to go to the yard, it will be deposited on the ramp (made of 10" and 12" I-beams); it will roll to the end of the ramp, which terminates at storage section "W." From here it will be picked up and stacked by the tire-mounted crane.

On the 100 ft. long ramp, stops are used to block the material at any desired point. Thus, instead of the tubing rolling to section "W," it can be stopped under crane No. 3, which will pick it up for stacking. These stops are also used to segregate stock where several heats are shipped in one car. Or this crane may transfer the material to any of three saw racks (see layout sketch) which deliver to the saws in the plant. Or, if the incoming stock is to go to a far side of the yard, crane No. 1 will load it on the 10-ton trailers, which are then hauled to location for stacking by the mobile yard crane.

Crane No. 4 unloads primarily bar stock, which is stored in bins in this runway. Bundles of this stock are delivered to production by semi-trailers,

which are loaded by the crane. Unloading crane No. 4 also loads gondola cars with steel scrap, an operation regularly performed in this area.

An eight ft. wide concrete platform runs the length of the dual railroad siding, extending beyond craneway No. 2. This dock gives access to tractors, fork trucks and the rubber-tired 10-ton trailers. Further, part of the rail car platform (extending beyond the craneway) is accessible to the rubber-tired yard crane. This machine may thus unload tubing or other types of steel, or load scrap when the overhead cranes are temporarily overloaded.

To get material into production, a stock requisition is issued by Production Control to the superintendent of the Cutting Department who turns one copy over to the yard foreman. The yard foreman then obtains from the record the oldest heat number and the location of the material and then marks on the requisition the number of lengths required. This requisition is then turned over to the proper material handling operator who can bring the material to production without further instructions. If, for example, the ram truck is assigned to bring several lengths from the storage shed on the south end, the material can be routed via the ramp to the shop. Crane No. 3 will pick it up and deliver the lift to one of the saw racks.

A material checker at the receiving point in the plant receives the order and checks it. (The material is checked as it comes out of the cars according to size, wall thickness and type, and is charged to the yard.) As the material is received in the plant, it is charged to production. All records go to a shop record office where the perpetual inventory system is maintained. Each heat is identified by a laboratory control number and the record maintained enables us to use up each heat in its entirety before starting on a new heat. This assures that the oldest material is always used first, which cuts down the number of heats in process.

Thus, from a handling and flow standpoint, the tubing from the cars may be routed in any conceivable combination. From No. 1 crane to the stockpiles maintained within the No. 2 and No. 3 craneways (via the transfer table or ramp); or it may be routed directly to section "W" over the ramp for stacking by yard crane. Or the material may be sent by trailer to the respective stacks for storage. The ramp is also available for routing material into the plant, or loads may be delivered by trailers to the machine loading areas. Again, the layout of the railroad facilities is such that the yard crane and other rolling stock have direct access to the siding, which facilitates loading, unloading or routing of material to the plant. Complete flexibility in the material flow is thus obtained.

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4000-POUND AND 6000-POUND
MOTOWLIFT
with THESE FOUR SUPERIORITIES

POWER—*plenty!* With that dependable, rugged, 6-cylinder FORD Industrial Engine.

CLUTCH—Years in development! The *Best* from Borg-Warner.

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REPRESENTATIVES IN ALL PRINCIPAL CITIES
See Your Classified Telephone Directory for Nearest Distributor

CANVAS BELTING . . .

(Continued from page 28)

Stepped Joint

This type of joint is used principally for making belts endless in the field. This can be done with either folded or overlap belts. In preparing the splice the plies at each end are cut at an angle of 33 degrees and stepped. The distance between the steps is one-third the width of the belt. (See Fig. 11.)

The joints are then cemented together with a joint cement and clamped in place. Special field instructions are available for making this joint. Where the belt is highly stressed and extreme strength is required, the joint should

Figure 11

be sewn with a portable sewing machine. Manufacturers' field crews are available to make belts endless in the field where sewing is required.

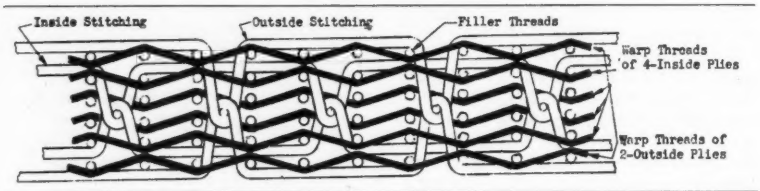
Ultimate Strength of Joints and Fasteners

The ultimate joint strength of the stepped joint **without** sewing is 193 pounds per inch of width per ply. When the stepped joint is sewn the ultimate strength of the joint approximates the ultimate strength of the belt. Tests made with Alligator fasteners show an ultimate joint strength of 92 lbs. per inch of width per ply and, with the Peerless laced joint, ultimate joint strength of 135 lbs. per inch of width per ply.

The Stitching

Fig. 12 shows, in a conventional way, the construction of a 6-ply stitched canvas belt having an outer cover (2 plies) and a 4-ply filler. Duck of the proper weight is cut and assembled to make the four inside plies and these are stitched together by rows about 1" apart. The stitching operation shortens the length of the belt and decreases its width; therefore, in order to load uniformly all warp threads of both the filler and the cover, the stitched filler is put on large stretching frames and stretched back to a carefully predetermined length. Then the wrapper, or cover, is added to make up two more plies and the whole belt is sewn again. This time the stitches are in rows ¼" apart.

Figure 12



The Lockstitch

The thread normally used in stitched canvas belts is a strong cotton twine heavier than the warp or filler (see below). All belts are sewn with a true lockstitch (Federal Specification No. DDD-S-171, Stitch Type 301). The lockstitch between the needle thread and the bobbin thread of the sewing machine is buried within the thickness of the belt (see Fig. 12) and it will not come loose even when the threads are worn away on either side of the belt. In that respect the sewing is like that which fastens on the sole of a shoe; the sole is held on even after the exposed stitches have been worn away.

The stitching is available in three basic types:

Regular Stitching

Regular stitching consists of 36 to 44 lockstitches per foot, using 12/14 or 8/8 thread. This is normal construction and is recommended for all average conveyor uses.

Short Stitching

Short stitching consists of approximately 60 lockstitches per foot using the same size of thread. In this stitch, of course, the plies are held together at closer intervals and, therefore, the resistance to ply separation is greatly increased and the internal friction between the plies substantially reduced. The tensile strength of the belt, however, is not materially affected. Short stitching is recommended for use over very small pulleys, or where maximum flexibility is desired. It is also recommended for elevator belts or where slats or buckets are to be used.

Smooth Stitching

Smooth stitching consists of short stitching of approximately 60 lockstitches per foot using 10/5 thread sewn below the surface of the belt. Smooth stitching can be furnished either on both sides or one side only with short stitching on the other. It is recommended for use whenever the conveyor designer requires either one or both sides of the belt to have a perfectly smooth face. Generally, if the designer requires only a smooth carrying side it is desirable to sew the pulley side with standard short stitching in order to obtain maximum traction. If

One Euclid 10-ton Overhead Crane
+ One Euclid 3-ton Semi-Gantry Crane
SOLVES A TOUGH PROBLEM
IN PARTS HANDLING
In a Modern Machinery Plant
Handling costs were sharply curtailed with considerable reduction in manhours per unit assembly.
Overhead crane moves material to be processed to fabricating bay where floor controlled semi-gantry crane is utilized in welding of sub-assemblies.
A Euclid proposal for your particular plant is available without obligation.
Write for complete information.
EUCLID CRANES AND HOISTS
Raise Profits
THE EUCLID CRANE & HOIST CO.
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the user contemplates eventually turning the belt over, then it should be specified as smooth stitched on both sides. Smooth stitching is generally recommended whenever diverter arms are used.

The Thread

The designations of the thread mentioned above refer to the size of the thread and the number of plies. For instance, 12/14 thread is No. 12 in size with 14 plies.

In the case of asbestos covered belts, manufacturers use a special asbestos thread which has been developed over the years. The thread used in asbestos covered belts has been developed to the point where, in addition to being able to withstand high temperatures, it has an ultimate strength of approximately 20 lbs. as compared to approximately 30 lbs. for our regular 12/14 thread. This asbestos thread is used on the carrying side of the belt while standard 12/14 thread is used on the pulley side for maximum strength.

Carrying vs. Pulley Side Stitching

It is well for the conveyor designer to keep in mind, if he has special requirements, that stitched canvas belts can be furnished with the thread on the carrying side different from that on the pulley side.

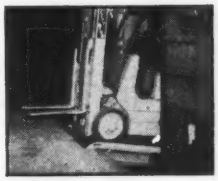
Edge Stitching

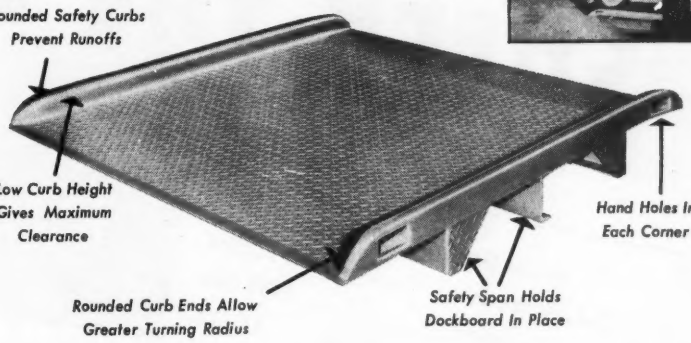
Many types of belts are furnished with reinforced edge stitching. The rows of edge stitching are ⅛ of an inch apart, and on all belts from 4″ to 12″ wide the edge stitching carries in 1″ on each edge. On belts from 12″ to 132″ the edge stitching carries in 2″ from each edge. This edge reinforcing gives much additional strength in abrasion resistance to the edges of the belt, and in cases where belt edges receive extreme wear and are the first point of failure on the belt. Belts reinforced in this manner can be retained in service for a much longer time since fraying is minimized. This type of edge reinforcing is known as Style "A" sewing. In Style "B" sewing ¼″ spacing carries across the entire width of the belt. In all belts, however, the stitching must always be carried to the extreme edge. This is most important in gaining maximum edge strength.

Acknowledgment! FLOW acknowledges with thanks the Main Belting Co., Philadelphia, as the source of the data and exhibits appearing in this article. Thanks also to the Imperial Belting Co. and Victor Balata and Textile Belting Co. for their help in checking the manuscript.—Ed.

MAGCOA *Magnesium* DOCKBOARDS

...will solve your carloading problems




Rounded Safety Curbs Prevent Runoffs
Low Curb Height Gives Maximum Clearance
Hand Holes In Each Corner
Rounded Curb Ends Allow Greater Turning Radius
Safety Span Holds Dockboard In Place

★ Weigh ¼ as much as steel ramps of equal size and strength
★ Bevel edges minimizes jarring of load and equipment
★ Bend angle keeps Dockboard flush with floor and dock
★ Raised pattern safety tread
★ Magnesium is non-sparking for greater safety
★ Every Dockboard designed to meet your particular specifications

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MAGNESIUM COMPANY OF AMERICA
EAST CHICAGO, INDIANA

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Here's a C-F Lifter, working with a mobile crane, unloading a car of steel in record time. C-F Lifters can pick up, carry and unload more tonnage per hour, using less man and crane time than any other method because they are *designed* for economical operation.

One man operation of a C-F Lifter means lower labor cost—wide carrying angles and tong action mean safer carrying—split-second opening and closing adjustments of the Lifter jaws to handle varying sheet widths assure speedy handling—add them all up and you have economical materials handling with a C-F Lifter.

If you can handle or use sheet metal, a C-F Lifter can reduce your costs the first day it goes to work for you. Ask for the Bulletin "C-F Lifters"—it details the advantages and economies of these superior sheet handling machines.

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1320 S. Kilbourn Ave., Chicago 23, Ill.

for PROOF that General Boxes CUT COSTS . . . let's

CHECK THE RECORD

No. 7105

Gross Shipping Weight	
Old Package	410 lbs.
* New Package	364 lbs.
Weight Saving	46 lbs.

No. 7038

Gross Shipping Weight	
Old Package	120 lbs.
* New Package	104 lbs.
Weight Saving	16 lbs.

No. 7023

Gross Shipping Weight	
Old Package	39 lbs.
* New Package	34 lbs.
Weight Saving	5 lbs.

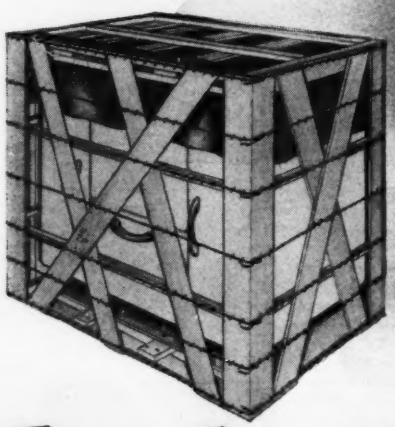
No. 7147

Gross Shipping Weight	
Old Package	95 lbs.
* New Package	83 lbs.
Weight Saving	12 lbs.

General Engineered
CONTAINERS PROVIDE AVERAGE SAVING OF 19.75 LBS.

Here's *concrete evidence* of savings! 4 widely diversified products from the case history files of our Designing and Testing Laboratories show an average weight saving of 19.75 lbs. Many of the hundreds of case histories on file show even greater weight savings!

Better check today on this vital subject. We'll be glad to help design a more efficient container for your product.



* "New Packages" were designed in our DESIGNING and TESTING LABORATORIES

General ★★★★★ BOX COMPANY

engineered shipping containers

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DISTRICT OFFICES AND PLANTS: Cincinnati, Denville, N. J., Detroit, East St. Louis, Kansas City, Louisville, Meridian, Miss., Milwaukee, Sheboygan, Winchenden. Continental Box Company, Inc.: Houston, Dallas.

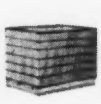
General Wirebound Crate

General Nailed Box

General Corrugated Box

General Cleated Corrugated Container

General All-Bound Box


Generalift Pallet and Pallet Box

General Watkins-Type Box

PACKAGING MECHANICS SECTION

A regular monthly section in which are presented solutions to the problems of efficient filling and handling the boxes, cartons, bags, bottles, cases, etc., used in commerce and industry.

CONTENTS

PACKAGING SMALL HOUSEHOLD APPLIANCES —at The A. C. Gilbert Co. Hundreds of electric food mixers flow each day from an area totaling less than 1000 sq. ft. Tested packing techniques insure protection to vulnerable parts. Electric outlets on a conveyor belt test the mixers during transit. Adroit placement of interior packing materials aids production..... 60

DIFFICULT AUTOMOTIVE ITEM PACKAGED. A leading automobile manufacturer's pack for steering column covers. The problem solved: to prevent the item from being scratched and to design a pack which would serve as a material handling pallet and a shipping container..... 65

Packaging Small Household Appliances

Economic space utilization in the production and packaging departments and tested packing techniques have always been two aims of the A. C. Gilbert Company's policy. This report deals with the final assembly and packing of electric food mixers—a typical illustration of this policy.

MOST consumers are familiar with many of the products of the A. C. Gilbert Co., New Haven, Conn. Erector Sets, American Flyer Electric Trains, Gilbert Magic Sets are "one of the family" in thousands of American homes. Less familiar is the line of home appliances which it also manufactures. This includes electric mixers, hair dryers, and electric drills.

Parallel Conveyor Lines—Reduced Floor Area

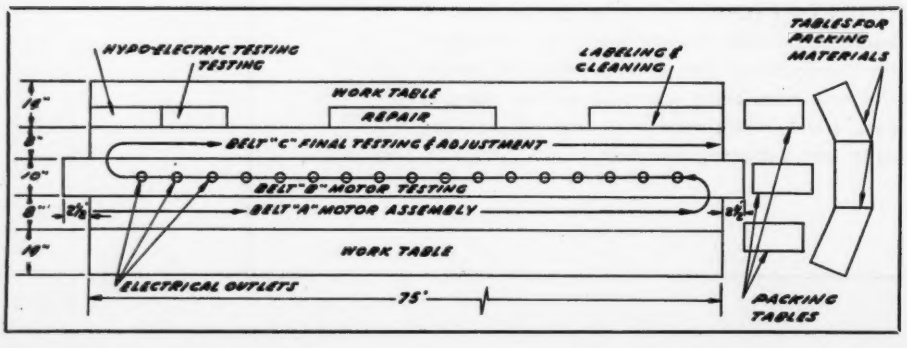
The final assembly and packing department for mixers is confined to a total area of less than 1000 sq. ft. In this department hundreds of units are completed each day. Three parallel belt conveyors serve for final assembly, as follows. 1. Belt "A" for assembly. 2. Belt "B" for motor testing. 3. Belt "C" for final testing and adjusting.

The two outside belts are 75 ft. long and eight ins. wide; the middle one is 80 ft. long and 10 ins. wide. Work tables flank the outside belts. Conveyor "A" travels from east to west, the middle belt runs in the opposite direction, while the outer line also travels from east to west. In this way, the mixers start at the west end of the department and complete their journey at the east end. Three conveyors totaling 230 ft. in length are thus confined to an area only 80 ft. long.

The center belt is equipped with electrical outlets spaced on 10-in. centers. Each outlet has two prongs extending through the belt which contact two lengths of electrified rod in the table which supports the belt. Both the drive and idler pulleys are cut out in the center to accommodate the prongs.

Hand Truck—Skids System

Mixer components are hand-trucked from fabricating and painting and spotted next to operators along the lines. Very small parts, such as screws and springs are placed in bins against the wall be-



SEVERAL HUNDRED mixers flow daily from this department totaling less than 1000 square ft.

Kimpak* Float Packaging

POULTRY MEDICINE
Dr. Salsbury's Laboratories
Flotation Packaging

Surface Protection. Love seat. Photo courtesy of Century Furniture Company, Hickory, North Carolina.

Cuts shipping costs— reduces damage in transit!

Do you handle your product with extreme care during the manufacturing process—then trust it to outmoded, inferior quality packaging materials after it leaves your shipping room? You may not be able to answer that question if you haven't seen KIMPAK* Float Packaging at work.

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KIMPAK creped wadding is as neat, clean and easy to apply as wrapping paper, to make your packaging operation fast, up-to-date. It's designed to absorb continuous vibration, ward off severe shocks, cushion and defend your product against roughest handling. This highly-efficient cushioning material protects the finest finish from scratching, bruising, pressmarking and "burning".

KIMPAK is available in sheets, pads, rolls, various thicknesses and backings; absorbent or moisture resistant. There is a specification for all four basic methods of interior packaging: Bracing and Blocking, Flotation, Surface Protection, Absorbent Packaging. For further information, contact your nearest distributor, listed in classified phone directories under "Packing Materials" or "Packing Materials—Shipping"; or write to Kimberly-Clark Corporation, Neenah, Wisconsin.

Combination Wrap. Cory coffee brewer. Photo courtesy of Cory Corporation, Chicago, Illinois.

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The SISALKRAFT Co.
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hind the operators.

At the first station, motor components are added to a die-cast shell, followed by other assembly operations. The last operator on Belt "A" joins the motor and the base and places the mixer on Belt "B", plugging it into an outlet at the same time. The middle belt travels approximately 1½ ft. per minute, giving a total travel time of 35 minutes, ample for testing motor heat and overload.

PARALLEL CONVEYORS have saved company valuable floor area. Note electrical outlets.

The use of the center belt for testing accomplishes two important functions. 1. Besides giving sufficient time for motor testing, it eliminates rehandling from the conveyor to a separate station. 2. The parallel arrangement of the belts uses available manufacturing space economically.

The product is transferred from the testing conveyor in the center to a "hypo-electric" station where 1000 volts are shot through each motor to test for shorts. This operation takes place inside a cabinet located on the work table.

At other stations on this line, the beaters, juicer, top bowl and turntables are added and several inspection operations performed. Minor adjustments, cleaning and labeling complete the operation, after which the units are replaced on the conveyor for transfer to packing.

The packing station, located at the west end of the conveyors, consists of several tables arranged in horseshoe fashion on which packing materials are placed. Knocked-down cartons, inserts and liners are arranged in order of their use. A tape dispenser is at each station. Small tables in the center of the "horseshoe" are used for packing.

The cartons measure 10½"x17"-x11". The container and internal materials were designed to hold the mixer and 11 components so that no part touches any other part. All mixer accessories are thus protected from both internal and external shock.

OPERATOR inserts mixer motor into compartment. Other sections contain parts.

The effectiveness of the packing methods and materials is attested to by the fact that damage to the fragile parts during shipping is

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negligible. An operator requires only two minutes to assemble a carton, wrap and place each part, close and seal the container and place it on a skid.

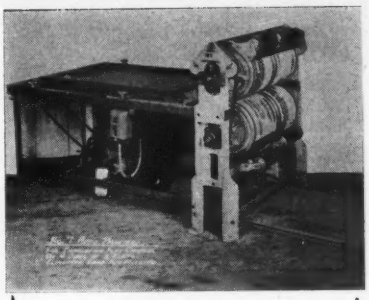
The steps required for packing are as follows. 1. A knocked-down carton is assembled and glued at the bottom. 2. A square insert is placed at the bottom for added strength. 3. The base of the mixer is wrapped in kraft paper and placed in the carton. 4. A scored section of fibreboard is put around the base. 5. A wrapped motor is inserted in the liner around the mixer stand. 6. Paper-wrapped beaters, turntable and spout are inserted in liners at the other side of the stand. 7. Paper is added to take up any slack.

After a second square insert is placed (step 8), approximately one-half of the total carton area has been used. The inserts and liners separate the different components and at the same time provide a place for smaller units such as the spout and beaters. A layer of wrapping material around each component is designed to eliminate scratching and/or chipping.

The large bowl, small bowl and juicer bowl are nested within one another inside the carton (steps 9, 10 and 11). Scored fibreboard retainers are placed between each for support and protection. 12. A scored folded insert at the top takes up the remaining slack in the container and supports the juicer bowl. 13. Advertising matter and a cook book are added, and the top of the carton glued (step 14).

A total of 10 inserts and retainers are used for internal packing. While the application of fibreboard sections for interior packing is not unique, the method used by the A. C. Gilbert Co. shows the importance of this material as a means of damage prevention.

Prompt arrival of mixers at dealers in good condition benefits the company with (1) lower freight claims; (2) reduced returns because of damage; (3) increased customer and dealer good will.



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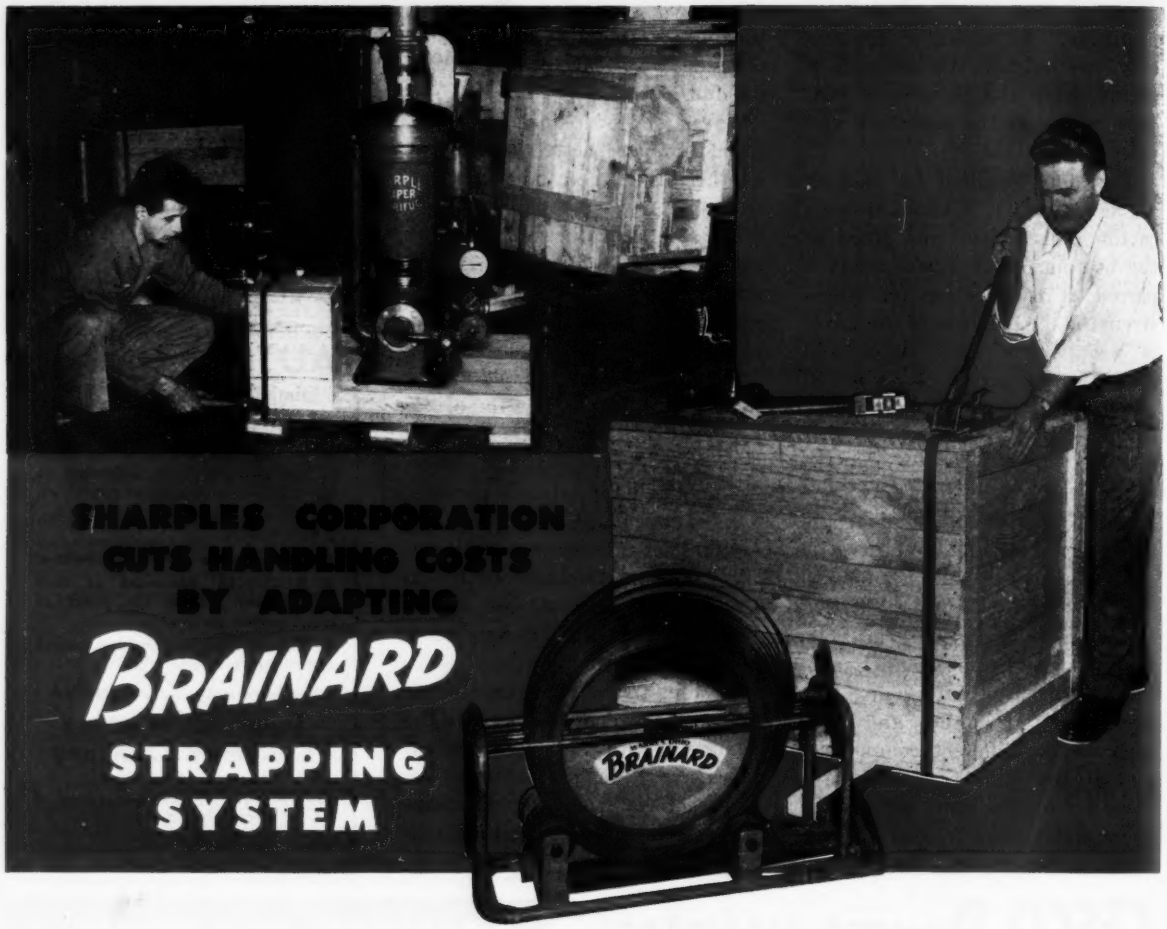

Sharples Corporation, Philadelphia, engineers and leading manufacturers of centrifugal equipment, formerly blocked their heavy — yet fragile — products into crates to assure safe shipment. This method required expensive and time-consuming special handling. Brainard strapping specialists suggested a new package which utilized the strength and speed of the Brainard Strapping System. This resulted in substantial savings in both time and labor. *Result — Sharples now has the most efficient shipping in its history.*

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Steel Strapping Division, Brainard Steel Co.
2136 Larchmont Avenue Warren, Ohio

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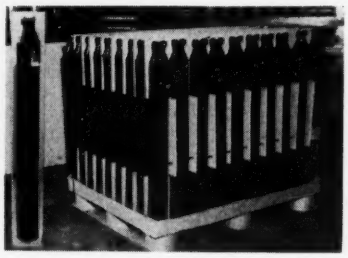
SHARONSTEEL

STEEL STRAPPING DIVISION
BRAINARD STEEL COMPANY
2136 Larchmont Ave., Warren, Ohio

DIFFICULT AUTOMOTIVE ITEM PACKAGED

IN cooperation with an industrial packaging concern, the Nash Motors Company, Kenosha, Wisconsin, designed a pack for a very difficult type of commodity: the steering column cover for the 1950 model. The problem was to make a pack that would keep

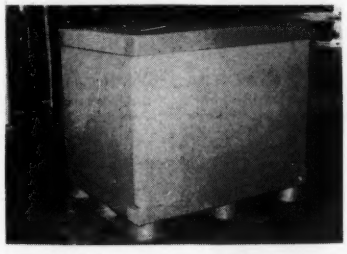


BEFORE THE taped tube is attached.

the item from being scratched and build it into a load unit which was to serve both as a material handling pallet and a shipping container.

The difficulty was that the tubular type of construction had as a mounting support two ¾" projecting studs which not only made a cellular type structure impossible but also presented a definite hazard as far as scratching other units was concerned because of vibration.

The first thought was the standard one of laying the units on their sides, thus building up a satisfactory pack; however, this was soon discarded because of the peculiar shape of the unit.



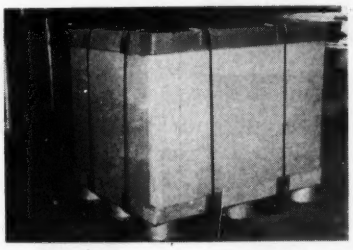
THE PACK is ready for metal banding.

The next approach was to stand the components on end, keeping in mind the standard 40" x 48" pallet size.

Three flat corrugated pads were used to serve similar to partition stock, but generally speaking would do a more satisfactory job of inner packing. Ten rows of nine steering columns were placed into a tray type expendable pallet, and partition stock inserted. Around this unit was placed a taped or stitched tube, the overall height of the 90-piece unit pack. This tube was covered with a scored and slotted tray and the entire unit held into position with four ½" metal bands.

The original test shipments were made from Kenosha, Wisconsin, to Nash Motors in El Segundo, California. The results were very satisfactory.

Following are the exact dimensions of the pads and pallets and other packing used in this 90-piece unit pack: One tray type pallet, I.D. 49½ x 39¾ x 4". Style 31M with nine 7" diameter posts. One taped or stitched tube 49" x 39¼" x 39½", made of 200# test board. 16 pads used for lengthwise separators



THE COMPLETED pack ready for shipment.

48⅞" x 11¾", made of 275# test corrugated board. Nine pads 39⅛ x 16" for crosswise separators made of 350# test double wall corrugated board. One scored and slotted tray used for the cover of the unit pack, I.D. 49½ x 39¾ x 4" made of 275# test corrugated board.

The end row with the projecting studs created a problem; therefore, a small built-up corrugated block was used as filler between the projecting studs. This small built-up pad was approximately 3" x 2 3/16" x ⅞". Nine of these pieces were required in each unit load.—Courtesy, Addison-Semmes Corp., Racine, Wis.

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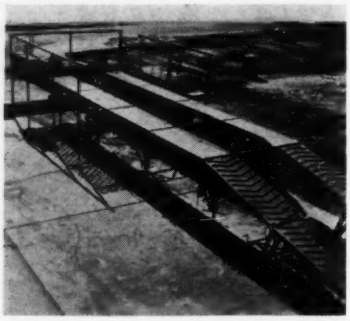
Foot of MONTAGUE ST. BROOKLYN 2

PORTABLE KNOCKDOWN GREASE RACK—This grease rack consists of two elevated platforms of four detachable sections each. The platform sections are 72 ins. long, 32 ins. wide, and are designed to support a



gross load of 30,000 lb. of vehicular weight when all sections are assembled. Six detachable ramp sections are pinned to each platform to permit vehicles to ascend and descend on either end. The ramp sections are 72 ins. long and 28 ins. wide, and subtend an angle of 12 degrees with the ground when assembled. Eight screw jacks are provided for adjusting the height of the platforms. Approximate weight of the rack is 6000 lb. which permits transport by 2½ ton, 6 x 6, standard military truck and one-ton trailer. Overall length when assembled is 373¾ ins. In a modified design a working platform is provided on three sides of the forward half of the racks.—Courtesy, Department of Defense, Office of Public Information.

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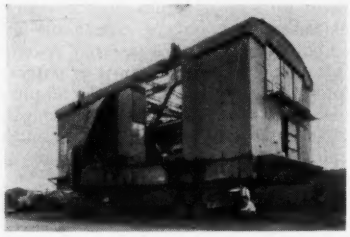
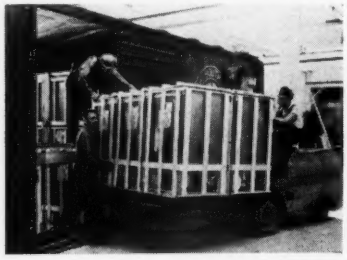
66 TIRES FOR MOVING JOB—When construction of the Delta Mendota Canal, part of California's Central Valley Project, called for the moving of a 610-ton dragline from Tracy to Los Banos, California, construction men faced a major project.

The normal method of moving this type of equipment is to dismantle it completely when leaving the factory. The use of an improved highway was out of the question as the largest unit, the main frame section, was 42′ x 50′ x 30′. The moving contractor used a combination of approximately 30 miles of un-improved country roads and constructed another 30 miles of private roads through open farm lands. To meet these demands, the combination of a truck trailer and dolly equipment



was run on 66 tires. Each of the 48 tires located directly beneath the heavy section carried an average weight of 8333 lb. Equipment used for this move included one diesel-powered truck tractor, one low-bed jeep and a full low-bed trailer. In addition, two special contractor-built dollies with 16 tires each were used under the rear end, and two tractors were used in front as towing units.—Courtesy, B. F. Goodrich Co.

OPERATION TIME HALVED—A six-unit pallet load of floor furnaces, in crates, is handled to carside by a fork truck at the Kent, Wash., plant of



Northwest Metal Products, Inc. Three men load box cars by this means. The work is performed in less than half the time as compared with former methods. Northwest Metal uses similar vehicles for in-plant operations, from die-handling to loading of scrap for shipment. —Courtesy, Electric Industrial Truck Association.

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BOND FOUNDRY & MACHINE CO., Manheim, Pa.

INSTITUTE, CHAPTER AND ASSOCIATION ACTIVITIES

THE Midwest Materials Handling Society, headed by President Robert C. Brady, journeyed to the Naval Supply Depot at Great Lakes, Illinois, for its monthly field trip and April 11 meeting. The 200 members, representing leading organizations in various industries, were amazed at innovations pioneered by the Navy.

OFFICIALS OF MIDWEST MATERIALS HANDLING SOCIETY and Naval Supply Depot, Great Lakes view seven-pallet stow of garbage cans. Reading from left to right, John L. Hamlet, Chief Quarterman Laborer, Naval Supply Depot; Les A Seversen, Vice-President, Midwest Materials Handling Society; Lieutenant E. J. Maiman, SC, USN, Naval Supply Depot; Robert C. Brady, Former President, Midwest Materials Handling Society; Joseph S. Williams, Executive Vice-President, Midwest Materals Handlng Society.

They saw row upon row of 7-pallet stows of Navy material rising 35 feet into the stratosphere of cavernous drill halls, built for the training of war-time recruits. Some 32,000 pallets were required to carry out the palletization of every conceivable kind of material. This material comprises 55,000 separate items which are issued to 500 customer activities.

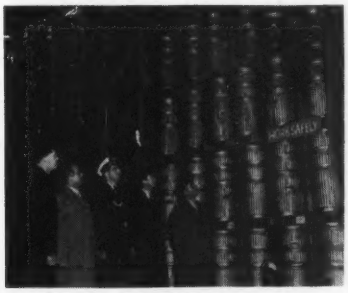
In their conducted tour of the 20 warehouses covering an area of 3 sq. miles, the industry representatives saw firsthand the shortcomings of the physical plant for a Depot operation. Most of the storage buildings were not constructed as warehouses and did not have railroad sidings. The Naval Supply Depot inherited a plant not laid out for depot operation. A distance of three miles separated some warehouses. The Depot was unable to switch cars between the most widely separated storage areas.

The Naval Supply Depot relied heavily upon materials handling equipment and developed materials handling techniques to overcome the defects of the plant and the shortage of storage space.

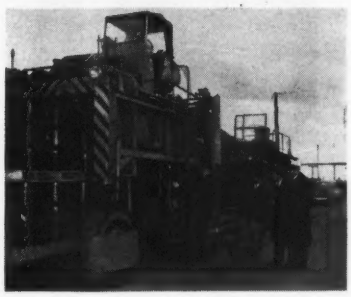
In addition to 60 trucks and trailers, some 86 individual pieces of materials handling equipment were in use for the transfer and storage of material.

Straddle trucks, with special extension shoes attached, transported 14 pallets of material weighing 30,000 pounds in a single load. Portable telescopic conveyors reaching far back in 30-ft. vans, reduced by 20% the time required for unloading.

Mr. Brady congratulated Captain Joel D. Parks, Commanding Officer, on the effectiveness of materials handling techniques developed by the Depot in solution of its peculiar problems.



PART OF THE GROUP of Midwest Materials Handling Society members touring the Naval Supply Depot, Great Lakes are impressed by the effective utilization of overhead areas by high stacking techniques. Knocked-down cardboard cartons enclosed in picture frames on pallets tower 30 ft. from the floor.



MIDWEST MATERIALS HANDLING SOCIETY officials view straddle truck at Naval Supply Depot. The truck equipped with extension shoes carries 14 pallets of 50 gallon drums. From left to right, John L. Hamlet, Chief Quarterman Laborer, Naval Supply Depot; Les A. Seversen, Vice-President, Midwest Materials Handling Society; Joseph S. Williams; Robert C. Brady, and Lieutenant E. J. Maiman, SC, USN, Naval Supply Depot.

THE April meeting of the Northeastern Ohio Chapter (Cleveland) of the Material Handling Institute, Inc., was jointly sponsored by the Society for Advancement of Management. Presiding at the joint meeting was Cyrus Wintersea, general manager, Willey Sign Co., Detroit; chairman of the meeting was chapter president Roy H. Stevenson. Speaker was Robert

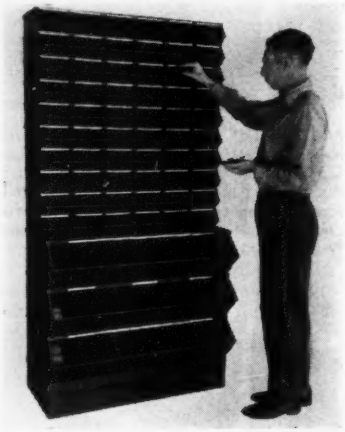
(Turn to page 78)

NEW PRODUCTS

For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13, or use postcard bound into this issue.

STACKBIN SECTIONS

NP1—Designed for storage of parts and fittings is this Stackbin manufactured by Stackbin Corp. Inter-locking steel units, of two to six bins each, make the required combination of sections. The unit shown requires only six sq. ft.



of floor space. Hopper-front bins make contents easy to see and reach. The bin is made of heavy-gauge welded sheet steel with folded edges. Five standard sizes from 4″ high, 12″ long and 37″ wide to 11″ high, 24″ long and 37″ wide are available.

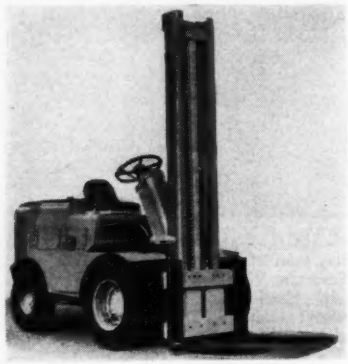
HEAVY-DUTY TRACTOR

NP2—The Mercury Manufacturing Co. has announced a heavy-duty electric industrial tractor to be known as Model A-800-3. It is a two-motor four-wheel

drive, four-wheel steer machine which develops a maximum tractive effort in excess of 4000 lb. Light travel speed is better than six miles per hour and the tractor chassis weight, less power source, is 4700 lb. The tractor, less coupler, is 84″ in over-all length, 44″ in width, and 66″ high. Wheelbase is 50″ and the outside turning radius is 92 ins. Each of the separately powered drive axles is of fully enclosed double reduction spiral bevel and spur gear type with heavy-duty automotive differential. Spring suspension is semi-elliptic shackled type and the four-wheel steering is by means of automotive hand wheel and cam and lever gear.

HEAVY-DUTY FORK TRUCKS

NP3—Broadening of a line of fork lift trucks to include heavy-duty models with 4000-lb. and 6000-lb. capacities has been announced by Service Caster & Truck Corp. Models have dual pneu-



matic tires. The power plant is a six-cylinder industrial engine of 226 cu. in. displacement. Features include a heavy-duty integral drive axle and constant mesh transmission; a clutch that is designed to be replaced in two hours without removing engine or transmission; single lever control for lifting and tilting operations; a single lever automotive type gear shift. Other features include the grouping of instruments and gauges beneath the steering wheel for easy visibility; re-designed hydraulic system; frame design for maximum maneuverability; hydraulic brakes and high pressure lubrication at all greasing points.

MECHANICAL OVERLOAD RELEASE

NP5—Users of slow-speed machinery that can be equipped with reduction drives can now protect equipment against heavy shocks, impact, and choke-load conditions with a mechanical torque-arm overload release invented by The American Pulley Co. It is further stated that the release is applicable to practically all types of slow-speed machinery, elevators, conveyors, mixers, blenders, etc. It is said to be quickly installed without any alterations to the drive and afford positive, instantaneous protection against damage to equipment caused by obstructions, choke-loads, overloads, frozen bearings and misalignment. The overload release automatically disengages itself and can be easily reset by the operator.

½-YD. PAYLOADER

NP6—Model HE is the designation of a Payloader tractor shovel with ½-yd. bucket capacity, manufactured by the Frank G. Hough Co. It will dig, load trucks, grade, level, backfill, spread, transport and remove snow. It will also handle bulk materials both inside and outside and will lift, lower, push and haul. The addition of the Model HE to the line makes five sizes of tractor shovels available, with bucket capacities of 12 cu. ft., ½-yd., ¾-yd., 1¼-yd. and 1½-yd. Models have a full-reversing

transmission with four forward and four faster reverse speeds coupled with forward-reverse control separate from the regular gear shift. Ball bearing steering, hydraulic brakes, comfortable operator seating and operator location for full visibility of all operations are features of Model HE. Full dumping clearance of 91 ins. is provided to load trucks. Its capacity for dumping and closing its bucket hydraulically dumps loads slowly or abruptly as desired. This feature saves truck springs and bodies from shock and damage, speeds loading cycles and enables trucks to be heap-loaded without spillage, according to the release.

LIGHT-WEIGHT TRACTOR

NP7—A towing tractor, which need not be ridden to be operated, and is designed to tow 10 tons on trailers over

a level course at speeds from 1 to 6.5 M.P.H., has been announced by the Industrial Truck Division of the Clark

Equipment Co. Known as the Clarkette-5, it is designed so that the driver can operate the machine while walking on either side. This feature facilitates order-selection work, for which the tractor was designed. A combination clutch-and-throttle control bar extending across the width of the vehicle above the cowl is designed for ease of control and driving while the driver is walking. By moving the bar forward, the driver can move the tractor and train a few ft. at a time, or from item to item in the order-selection line. The weight of the train acts as a brake, giving the driver maximum time to pick items and place them on the trailers. If positive braking is necessary while the driver is walking, he touches a foot to the brake bar at the rear of the driving platform. The parking brake is actuated by electricity and is controlled by a toggle switch on the instrument panel.

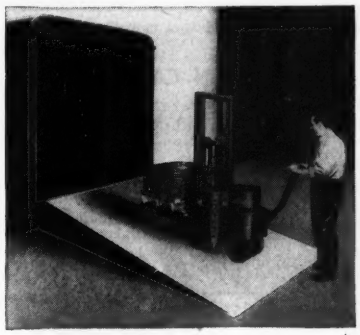
SHIPPING RACKS

NP8—Simplification of box car loading is made possible with new portable rack equipment manufactured by Equipment Manufacturing, Inc. The box car rack

systems consist of welded tubular racks fabricated for handling of most parts. Special framing, adjustable supports and bulkheads complement the equipment. The racks are fast-stacking, self-locating types which permit handling by lift truck. The system is designed primarily for shipment of high volume assembly parts between plants. Protection of parts is another feature of the system. With less handling of the parts and complete separation of the loads by the special racks, damage is reduced to a minimum. The release also points out that a major advantage of this method is the elimination of the cost of packing individual parts.

ADJUSTABLE LOADING PLATFORM

NP9—The Make-It-Evener raises a loading platform or dock to the height of an automobile truck. It is manufactured by Revolvator Co. Built into the loading platform like a hydraulic elevator, the movable platform is usually



about 18 ft. long by 6 ft. wide. The inside end of the platform is held in position by a pivot, while the outer end is raised or lowered by hydraulic ram operated by electric-oil, air-oil, water or by hand. The capacity can be made to suit requirements up to 20,000 lb. The pivoting platform may also be installed flush with the ground so that the rear wheels of highway trailers and trucks may be raised or lowered.

HEAVY-DUTY FORK TRUCK

NP10—Silent Hoist & Crane Co. is now offering a new series of heavy-duty Liftruks. These are available with 5, 7½, and 10-ton capacities. Dual pneumatic traction tires are mounted on a

"dead" axle which supports the chassis and fork load. Lifting and tilting hydraulic units are oversize, operating at moderate low fluid pressure. The lifting guides are interlocked with each other to provide alignment and equal distribution of the fork loads on them. Improved vision for the operator has been accomplished. It is further stated that liberal ground clearance has been provided. Various attachments, such as shovels, special forks and fork extensions, power spreaders, rotary aprons for forks and special winches and crane booms are available.

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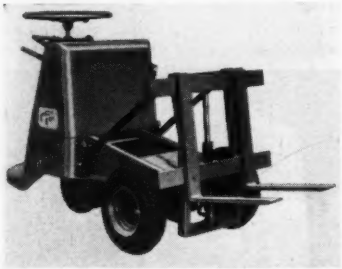
HYDRAULIC LIFT FOR MOTO-BUG

NP11—A hydraulic lift attachment for the Moto-Bug has been designed by the



Kwik-Mix Co. Adding the fork lift feature to this power wheelbarrow is said to increase its usefulness in special handling problems, particularly in industrial plants, shops and in construction work. The manually operated hydraulic pump lifts a capacity load of 500 lb. Forks tilt to the rear for load balance and are adjustable to a minimum width of 33 ins. for clearing narrow aisles and doorways. Other attachments include a five-ft. scraper blade or snow plow attachment. The vehicle also has a 10-cu.-ft. hopper body and a 1200-lb. platform body. All front end attachments can be easily interchanged, it is stated.

BURDEN CARRIER

NP12—Lewis-Shepard Products, Inc., has announced an addition to its line of materials handling equipment. Known as the ToteMaster Burden Carrier, it is suited for use by railroads, steamship companies, industrial plants, express

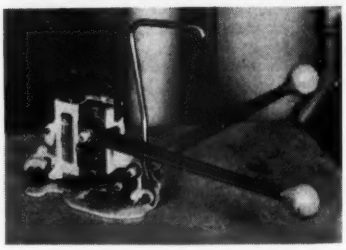
companies, warehouses, utilities, foundries. The model has a 2000-lb. capacity and 21 sq. ft. of loading space. It is powered by a 20 H.P. four-cylinder high compression water cooled engine, and is governor controlled for speeds up to 20 M.P.H. Other features include an electric starter, hydraulic airplane type brakes, seat operated parking brake, T handle steering, pneumatic tires, and two-wheel drive through automotive type differential. It is claimed that three speeds forward, one reverse, save strain on engine, increase grade performance with heavy loads, and lower maintenance cost.

HAND HOISTS

NP13—Wright Hoist Division of American Chain & Cable Co. has announced a new line of Wright Safeway hand hoists. They are made in capacities from ½ ton to four tons. According to the release, they are compact, lightweight and easy to handle in tight places. Construction features include simplicity of design, a modern gear drive, brake, steel load chain, steel housing, self-lubrication, and drop forged top and bottom hooks.

AUTOMATIC SEAL FEED TOOL

NP14—An automatic seal feed tool for ¾" strapping, Model A-34, has been announced by Signode Steel Strapping Co. This tool weighs only 15 lb. The model tensions and cuts the strapping, automatically feeds the seal and crimps it to complete the operation. The seal magazine is designed for quick loading and



holds a clip of 75 seals. The A-34 can be released at any point in its operating cycle if it is necessary to relocate the strap. Normally, the tool is used on top of the container or skid, but is equipped to accommodate a suspending hook, a feature which makes it possible to operate the tool from a natural position on the sides of high skids or containers.

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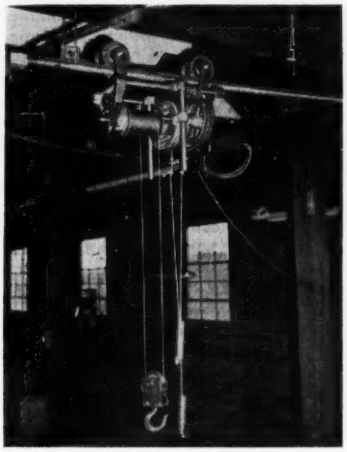
POWER HOIST

NP15—A Multi-Purpose Power Hoist unit is now being manufactured by the Flinchbaugh Co. It lifts 500 lb. at 25 ft. per minute or 250 lb. at 50 ft. per minute. The unit comes complete with adjustable track trolleys for either single



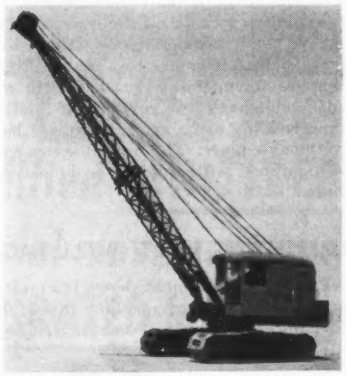
or double wheel tracks, a ¼-H.P. single 20 ft. lifts, grooved drum, automatic phase, reversing motor, cable for 10 and brake and conventional hook attachments. It is designed to lift or pull distances up to 200 ft. In addition to hoisting, the unit can be adapted as a power unit at 62 R.P.M. for running grindstones, or other drive applications suitable to speed and power rating.

LIGHT-WEIGHT HAND TRUCK

NP16—The Lite-N-Tuff hand truck is manufactured by the Hamilton Caster & Mfg. Co. It is made with one or two handles and with open or closed nose. In the one-handle model, the frame is arched and the handle mounted in the center. The model illustrated weighs 28 lb., making it suitable for carrying in vehicles. Due to the concave cross straps, the truck accommodates bags, barrels, drums, kegs, and paper rolls as well as cases, cartons, boxes and packages. Skids are provided to slide up or down steps and curbs. The ball-bearing wheels have 6 x 2.00 semi-pneumatic, puncture-proof cushion tires.

POWER SHOVEL CRANE

NP17—The Thew Shovel Co. has developed a power shovel-crane known as the Lorain-50. The machine is rated in the one-yd. class and has hydraulic coupling as standard equipment. This is claimed to prevent engine stalling due to digging circumstances and to provide a means of absorbing digging stresses and strains. The coupling is equipped with a plate clutch "de-clutcher" to permit stopping the machinery without stopping the engine. The power plant is a diesel six-cylinder engine equipped with a separate gas starting engine. Other features include roller bearing



turntable rollers, new type swing clutches, interchangeable boom equipment, four crawler mountings and crawler air controls. For further information, use the postcard bound into this issue.

FORK TRUCK IMPROVEMENTS

NP18—Introduction of major changes in 12 models of its sit-down Skylift models has been announced by the Automatic Transportation Co. Two ins. of lift have been added to the models; tiering height is now 132 ins., collapsed mast height 83 ins. All electrical con-

ADJUST-A-DOCKS

MEET TRUCKS ON THE LEVEL

TRIPLE DOCK CAPACITIES with LESS LABOR!

RUGGED HYDRAULIC SYSTEM. Push button control of the motor-operated hydraulic system quickly brings the floating dock to truck bed level where rounded steel arms float the dock at truck level.

AUTOMATICALLY SAFE. Limit switch automatic control prevents even a loaded Adjust-A-Dock from dropping if truck should move away. When not in use, Adjust-A-Docks are leveled with dock floor and sustain loads up to 400 pounds per square foot.

EASILY INSTALLED. Adjust-A-Dock installations, designed to withstand weather, are made completely above ground and have a 100% salvage value in event they are moved.

ADJUST-A-DOCK users have reported important savings in dock space, loading time, labor, handling time and damage. These savings, in many cases, paid for their entire Adjust-A-Dock installations in less than 30 days.

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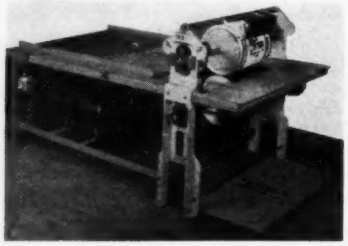
trols have been placed in an enclosed panel on the dashboard. The entire control panel may be removed as a unit. A new plugging relay on the controller is said to make it impossible to reverse the truck before it comes to a stop. Other changes include a large seat with an adjustable back rest, redesign of the tilt ram, welding and riveting the pivot bar to the axle plate. The Skylift series can be equipped with solid or cushion-type tires.

IMPRINTING MULTI-WALL BAGS

NP19—The equipment shown is a multi-wall bag imprinting machine manufactured by the Industrial Marking Equip-



ment Co. According to the release, the machine, when motorized, can imprint 2000 bags per hour. It uses interchangeable type or logotypes and has a built-in self-inking reservoir. The equipment is designed to take care of a wide size of bags. Side rails are adjustable. Spring loaded pressure roller is designed to compensate for variations in container thickness. The container is placed on the table top. A continuous traveling chain equipped with dogs pushes bags between the printing rollers. For further information, mail the postcard bound into this issue.

MEN IN THE NEWS . . .

(Continued from page 47)

tery construction and application. He entered the industry at the Philadelphia plant of Philco Corp., in 1928.

APPOINTMENT of Phil Norton, general sales manager of Wisconsin Motor Corp., Milwaukee, as a vice president of the company, has been announced by Harold A. Todd, president. Norton has been connected with the company in a sales capacity for more than 20 years, occupying the executive position of general sales manager for the past 10 years. He was recently elected to the post of president of the Internal Combustion Engine Institute.

Phil Norton

APPOINTMENT of R. S. Stevenson as general sales manager of the Allis-Chalmers Tractor Division has been announced by W. A. Roberts, executive vice president of the company. Stevenson succeeds Marshall L. Noel, who recently resigned. Stevenson has been associated with Allis-Chalmers since 1933 when he joined the Kansas City branch as a salesman. In 1948 he became assistant general sales manager.

JOHN I. Beicher has been appointed by the Industrial Truck Division of the Clark Equipment Co., Battle Creek, to be its regional supervisor, western region, with headquarters in San Francisco. Beicher has been with Clark since 1946. Until July, 1948, when he was advanced to an assistant salesmanagership and transferred to company headquarters in Battle Creek, he was a member of the sales staff and was stationed in Columbus, Ohio.

LINK-BELT Speeder Corp., Chicago, manufacturer of Link-Belt Speeder Shovel-Cranes, has announced that Columbus Basile was elected vice president for operations, with headquarters at Cedar Rapids, Iowa. All officers of the company were re-elected at a recent board of directors meeting. These were: D. W. Lehti, president; G. H. Olson, vice president; H. E. Kellogg, treasurer and secretary.

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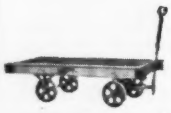

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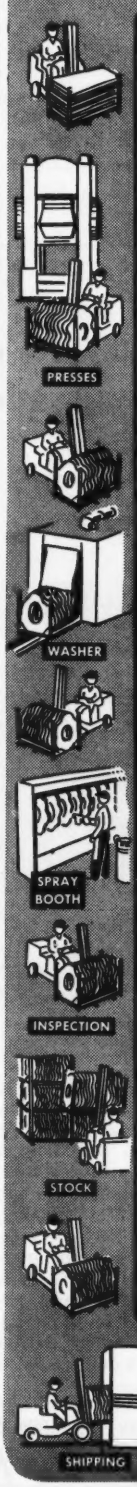

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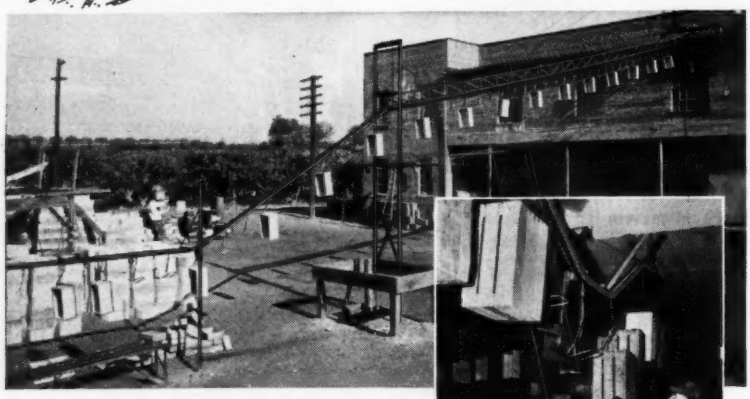
Flow DIGEST

The subject matter contained in each of the following digests was obtained from the magazine to which we give credit below.

Iron Age, March 9, 1950. "Electric Trucks Relieve Crane Congestion," page 84. At the Baldwin Locomotive Works steel skid bins and all small parts in diesel engine plant are to be handled by powered platform lift trucks. Operations of these vehicles are discussed in detail. Also:

"Kaiser-Frazer Makes Turnabout Fair Play," March 30, 1950. A "pin-wheel" mounting enables the company to ship 16 auto bodies on a flat car to its West Coast assembly plant. Shipping charges are said to be cut in half. Other advantages: loading and unloading time has been reduced to two hours; formerly almost a full day was necessary to load eight bodies into a flat car. During shipping, the bodies stand on end in pairs.

"ZIG-ZAG"—the conveyor as flexible as a KID'S CONSTRUCTION KIT



Fruit boxes being returned by ZIG-ZAG conveyor from packing plant to redistributing yard for return to orchards.

R-W

Zig-Zag Continuous Power Conveyors Raise Plant Productivity ... Lower Costs

Interior of fruit packing plant showing "dumper" hanging emptied boxes on ZIG-ZAG hooks for movement to yard.

Indoors or out, there's practically no limitation to the purposes for which ZIG-ZAG Continuous Power Conveyors by Richards-Wilcox can be used. ZIG-ZAG, the conveyor that has revolutionized materials handling in industry, is adaptable to almost every plant condition or layout, and is the last word in flexibility.

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Yes, an R-W ZIG-ZAG Conveyor System, once you decide to use it for a different purpose than originally intended, in another part of your plant, can be taken down and put up again as easily as a kid makes changes with his construction kit. You can take it down here—put it up there—and in most cases use *all the parts!*

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Railway Mechanical & Electrical Engineer, April 1950. "Shops and Terminals," page 219. Efficient handling in shops and terminals. Attachment on platform of a lift truck is designed for hanging railroad springs. Pictures show details of platform and attachment and applications. Springs can be placed in congested areas.

Ceramic Industry, April 1950. "Starts Colored Range Output." Ranges manufactured in four pastel shades—normal controls in all stages of production eliminate need of color matching of panels. Five-ton bundles of sheet steel are shown being handled by crane truck; a hoist is shown lowering sheets into drawing compound; conveyors move ranges to storage where they are handled by fork trucks. Steel strapping secures loads in rail cars.

Brick & Clay Record, April 1950. "Variety of Colors in Face Brick," page 56. The soft mud method of making brick. A brick former and pallet carloader have an output of 92,000 brick per eight-hour day. Pictures show crawler-mounted shovel digging new entrance to shale pit; rubber belt conveyor delivering shale; tractor-mounted front-end scoop transferring coal near kiln; fork truck transporting finished brick. Also:

"Kendrick Brick and Tile Company Expands to Meet Market," page 50. Approximately 35,000 brick are produced each day. Company incorporates modern ideas in plant layout and design. Other features: a two-mile network of conveyor; hydraulic rams located between the track move cars under and away from the off-bearing belt; automatically controlled twin tunnel drier and tunnel kiln combination.

Manufacturing and Industrial Engineering, March 1950. "Even Small Plants Can Gain the Advantages of Conveyors," page 28. Arguments in favor of using conveyors in small plants. It is shown that the initial investment of smaller conveyors is no greater than a new automobile. An over-all discussion of different types of conveyors, standard models and engineered installations.

Building Supply News, April 1950. "Third Annual BSN Report on Material Handling," page 87. A pictorial survey of material handling practices in the lumber industry. Topics include design of sheds and warehouses for most efficient handling; handling sheet metals; strapped lumber; replacing older trucks; pallet racks and flexibility in warehousing. Other subjects covered: walkie-type trucks for increased warehouse space; elevator tailgates for heavy deliveries; bulk handling in trucks; tire mounted and crawler cranes.

ON THE PALLET . . .

(Continued from page 46)

man's abilities at the highest possible level. Industry should select its recruits for their potential, rather than immediate productive ability, and then provide them with the necessary orientation and basic training to do a job. On-the-job training as well as a program of job rotation, promotion, and continuing education in both technical and management problems, either by company study programs or graduate study at universities, is also necessary. Westinghouse has recruited some 17,000 college graduates for its Graduate Student Training Course which is designed to match men and jobs through work assignments, technical and professional conferences, and individual counseling.

A SAVING of 26,000 manhours was effected at the Long Beach Naval Shipyard when it moved its small-item supply bins by units rather than dismantling them and repackaging the items. Units of four 3′x2′x7′3″ sections of the bins, containing electronic bits and pieces were picked up with fork trucks, with side plywood protectors installed to prevent loss of small items in transit. This reduced the time required at each end of the move from an estimated 15,000 to 2000 manhours.—*Courtesy, Department of Defense, Technical News Letter.*

THE Standard-Knapp Division of Hartford-Empire Co. has acquired ownership of Mailler Searles, Inc., whose home office is in San Francisco. The latter firm will continue as application engineers for the parent company and for other manufactures of packaging machinery and package-handling equipment. William H. Jaenicke continues as president and treasurer of Searles, and Robert H. Helliwell as assistant secretary. The other officers and directors are identified with the parent concern.

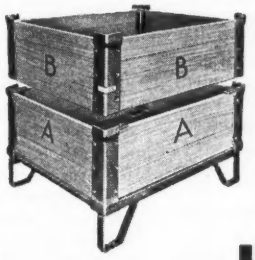
HIGH frequency sounds can strip grease from metal in a matter of seconds, according to Dr. Robert O. Fehr, General Electric engineer. Speaking before a meeting of the Albany Society of Engineers, he said that "ultrasonics", sounds pitched too high to be heard by the human ear, can be extremely useful to industry, particularly in tedious cleaning operations. The G-E engineer emphasized, however, that ultrasonics are not likely to be put to work cleaning dishes and clothes in private homes in the near future. The special needs of ultrasonic generators for these purposes would necessitate a large supply of electric power at a frequency hundreds of times higher than the usual 60-cycle household current. In tests at the G-E General Engineering and Consulting Laboratory, small metal parts were cleaned of grime and grease in less than ten seconds by ultrasonics. Cleaning the parts by methods usually used would have required several separate operations and at least an hour's time. Fehr envisioned ultrasonics cleaning tanks along production lines.

ROLL TRUCKS & SKIDS

ROL TRUK

● The RolTruk is a heavy duty truck that easily lifts and moves cylindrical items weighing up to 2000 lbs. Various models for more efficient, easier handling and transporting of paper rolls, barrels drums, kegs, etc. Bulletin 10RT.

● The Ironbound "safety-skid" with rounded corners, flush angles and countersunk bolts. This construction assures greater operator safety at a minimum of cost. Still the low-cost time proven method for handling of materials.



★ Skid with safety-type legs and reversible box top. Built so that additional skids and box tops can be tiered to any height. This is only one of the many specially designed skid and semi-live skid super structures—Ironbound engineered—for lower cost material handling.

Ironbound

IRONBOUND
BOX & LUMBER COMPANY
Materials Handling Division
30 HOFFMAN PLACE • HILLSIDE, N. J.

SKIDS • SEMI-LIVE SKIDS • DOLLIES • FLOOR TRUCKS

Gain Space with a MOTO-TRUC

Moto-Truc Motorized, Battery Operated Hi-Lift Walkie Trucks are up to 15" *SHORTER* due to more compact power unit. Easy grip roller type handle gives two speeds forward and two speeds reverse by a turn of the wrist. Push buttons in the ends of handle control the hydraulic lift. *Patented articulating hinged spring unit* holds drive wheel down on floor for better traction. Dead man controls and 4-wheel load support insure safety.

Capacity:
4,000 lbs., 80" lift.
2,000 lbs. up to 144" Lift.

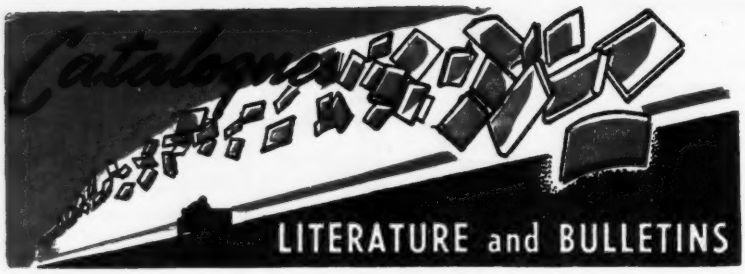
Write for Literature

Make Aisles Narrower

Stack Materials UP to Ceiling

HI-LIFT TRUCKS, PALLET TRUCKS PLATFORM TRUCKS.

The MOTO-TRUC Co.
1953 E. 59th Street
CLEVELAND 3, OHIO.
ORIGINATORS OF MOTORIZED HAND TRUCKS



The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

25—Safety Enclosures for Conductor Bars . . . An informative four-page illustrated bulletin is now available from Calabar Corp. A complete explanation of original system installations and safety enclosures for existing figure-8 conductor bars is included. Specifications are diagrammed. Parts and the entire system are catalogued. A valuable publication. For your copy, use the postcard bound into this issue.

26—Hand and Floor Trucks . . . The Feather-Lite Wheel-Ezy hand and floor trucks are described in bulletins available from The Rapids-Standard Co. The hand truck has a load capacity of 400 lb. Weighing only 22 to 26 lb., the model features "knitted frame" construction. Trucks are pictured with pneumatic and molded-on rubber tires in open frame and crossed-braced models. The second bulletin contains construction features, specifications and photographs of Roustabout all-steel and wood-steel combination platform trucks. They are available in four series and eight standard sizes in tilt and level types. All models are equipped with cold-forged or steel-forged casters, with truck capacities ranging from 800 lb. to three tons.

27—Proportioning and Blending System . . . A three-color, six-page bulletin (No. 3849) is available from the Richardson Scale Co. It describes its precise proportioning and blending system, heart of which is the Conveyometer, a self-testing feeder-weigher designed for stream delivery of small, crushed, granular or non-flushing ground materials. It is designed for proportioning any number of materials and can be used for delivering a prescribed tonnage of material by weight from supply to process and for recording the tonnage of material passed over it. It may also be used for proportioning materials in a continuous process of mixing and blending. Profusely illustrated.

28—Unit Loading of Paper Stock . . . A 36-page manual has been issued by the Addison-Semmes Corp. Profusely illustrated, it offers valuable information on the use of expendable corrugated fibreboard pallets in shipping and storing roll and sheet paper stock of various types and sizes. Case histories of actual shipments are accompanied by photographs and mechanical sketches that describe the palletizing and loading procedures. For your copy circle No. 28 on the enclosed postcard.

29—Burden Carrier . . . A folder from Lewis-Shepard Products, Inc., pictures and describes the company's one-ton-capacity burden carrier. Construction features include a four-cylinder, 20 H.P. engine; three speeds forward; hydraulic brakes; electric starting; and speeds up to 20 MPH. The model is 98½" long and 40" wide, with a loading space of 21 sq. ft. It has a turning radius of 72 ins. Drawbar pull is 1200 lb. and when used as a tractor with trailers it will haul up to 30 tons. The folder contains engineering drawings, specifications, photographs and operation features. One page is devoted to construction features of the engine.

30—Lifting Units . . . An 18-page, highly informative catalog, issued by the Globe Hoist Co., describes its lifting devices. The equipment uses oil, under pressure, to move a plunger out of a hydraulic cylinder. The plunger raises or positions the load-carrying platform. Return stroke is usually by gravity and is cushioned to a regulated descent by the controlled flow-back of oil into the reservoir. Sections illustrate and describe five types of cylinders, overhead power units, platform types, power units, loading ramps and elevators. Additional equipment discussed includes bridge lifts, lumber lifts, wall climbers, leveling ramps, paper roll lifts and industrial truck service lifts. Profusely illustrated. A valuable publication for plant libraries. Use the postcard in this issue.

31—Shovel or Dragline . . . A pocket-size three-color folder is offered by Schield-Bantam Co. It contains information on its tire-mounted shovel or dragline which may also be fitted with a clam shell, magnet, slings, or a pile driver. As a crane it can handle loads up to five tons. The concise informative folder contains many action photos showing the equipment using various attachments. One photo shows the machine with major components identified. For your copy circle No. 31 on the enclosed postcard.

32—Shuttle Truck . . . A brochure issued by the Mercury Mfg. Co. describes its Shuttle-Truk, an electric-powered riding type vehicle, which transports loads up to 2000 lbs. It operates from a two-wheel drive and a single wheel steer. It travels at speeds up to 8 MPH without load or 6½ MPH with a 2000-lb. load. The travel contactor is electrically interlocked with the seat so that the circuit is broken and brake is set when the operator leaves his position. The model is equipped with pneumatic or cushion type solid rubber tires. Outside turning radius is 82 ins. Action photos and engineering drawings.

33—Transfer Plate . . . A four-page, two-color booklet illustrates and describes a transfer plate for use on truck docks. It is available from Wm. Christensen Co., Inc. The plate is mounted on the floor of the dock and easily moved up and forward onto the truck platform. It is designed so that it cannot creep or shift out of position and has a non-slip safety thread. It is available in sizes of from 40"x54" to 54"x70" with capacities from 3500 to 15,000 lb. It has all-steel welded construction with steel-ribbed reinforcements. It has a 20 to 35-in. extension beyond loading dock; when not in use it becomes part of the floor. Full operating and construction details in concise and easy-to-read form. Circle No. 33 on the enclosed postcard.

34—Floor Trucks . . . A catalog page offered by the Orangeville Mfg. Co. contains information on its line of floor trucks, dollies and hand trucks. Fourteen models are pictured together with detailed specifications and operating information. Wheels which are furnished to order include iron, rubber and pneumatic with plain or roller bearings. The page is crammed with valuable information. Send for your copy today.

35—Containers . . . An eight-page pocket size booklet is available from G. B. Lewis Co. on its line of skid boxes, collapsible shipping boxes, folding boxes, box trucks and trays. One page is devoted to each type, with a photo of each and construction features and specifications. Two pages show "on the spot" photos of the various types of containers. They are shown at machines, being moved 10 at a time by fork track, on a conveyor and stacked in storage. This informative booklet may be had by mailing the enclosed postcard.

36—Mobile Hydraulic Lift . . . A mobile hydraulic lifting platform is pictured and described in a leaflet offered by Power Jacks Ltd. The unit is designed for loading and unloading highway trucks, handling press tools, dies and drums and barrels. The hand operated hydraulic pump and jack lifts 10 cwt. to a height of 4' 8" with a few strokes of the handle. The over-all

OPPORTUNITIES

Men wanted Jobs wanted Lines available

Rates: for "Positions Wanted" $4.00 minimum, limit 25 words. For all other classifications $4.50 minimum for 25 words, each additional word 15c; boldface type for all capitals, $7.50 minimum for 25 words, each additional word 20c; limit 50 words. Box address counts as five words. All insertions are payable in advance.

These classified columns are not intended for the advertising of new products by manufacturers, their representatives, or their distributors. These columns are limited to Help Wanted or Positions Wanted advertisements, and for the offering of used equipment by the users of such equipment.

FOR SALE

FOR SALE: 150 Shopworn Service Truck and Caster All Steel Welded Warehouse Trucks; 30 x 60 with push bar handle; 6" roller bearing casters; wheels are molded plastic impervious to oil, water, and mild alkali and acid solutions. Weight approximately 300 lbs. Special $47.50 each, FOB, Chicago, Illinois. Passman Bros., Inc. 1101 West Lake Street, Chicago 7, Illinois.

FOR SALE: Louden Overhead Conveyor Equipment, approximately 938 feet of Monotrack complete with two 90° and five 78° Curves, Hangers and End Stops. Complete electrical apparatus includes two 1500 lb. capacity Robbins & Myers Hoists with Double Row Ballbearing Trolleys, two Louden MotoVeyors, one Louden Rotary Converter from A.C. to D.C. Power. Above equipment actually used for five years. Priced for immediate disposal. Address replies to Box No. 6550, FLOW Magazine.

length of the equipment is 51", width 30". The platform is 30" square. The lifting range is up to 56 ins. Two rear casters are solid metal wheels with roller bearings; front wheels, also equipped with roller bearings, are of solid rubber. The folder states that a half-ton load can be lifted from the floor to a height of nearly five ft. in less than a minute. Photos and engineering drawings.

37—Shipping Containers . . . Pittsburgh Steel Products Co. has released a catalog page giving data on its wire shipping containers. Detailed drawings show three views of the containers. Three sizes are available: 36"x46"x24", 20"x48"x24" and 48"x48"24". Recommended maximum working load is 2000 lb. They are designed for fork truck operations. Detailed specifications are included. Circle No. 37 on the enclosed postcard.

PERSONNEL WANTED

MATERIALS HANDLING ENGINEER. A well known sizeable glass manufacturing company in Middle West wishes to secure an experienced materials handling engineer. Should have background in mechanical engineering and several years' experience in materials handling in a related industry. We are seeking an outstanding man. Salary commensurate with background. An excellent opportunity. Replies held in confidence. Please write detailed background about training and experience. Box 6150, FLOW Magazine.

Manufacturer wants aggressive Sales Agency connections to sell Material Handling and Oil Equipment Jobbers popular line Barrel Trucks and Drain Stands in Eastern and Western States. Also have line of rubber tired Industrial Wheels for Equipment Manufacturer and Jobber. Advise coverage, size of organization and give business references. Box 6350, FLOW Magazine.

LINES WANTED

Responsible Materials Handling Organization looking for established lines on exclusive basis for greater Chicago area. Warehouse facilities available. Box 6450, FLOW Magazine.

POSITION WANTED

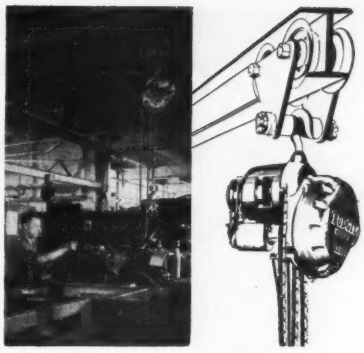
ENGINEERING EXECUTIVE, ME MEMBER ASME, AGE 45; presently employed as general and sales manager (national) conveyor organization desires position where extensive background in design, manufacture, direct sales and management will be used to advantage. Capable of directing expansion program. Box 6250, FLOW Magazine.

EQUIPMENT WANTED

DOLLARS FOR INFORMATION

We will pay 5% commission on all leads furnished to us, which result in our purchase of used handling equipment, such as fork trucks, pallet trucks, cranes, etc. Inform us of such equipment for sale and we will pay you commissions equal to 5% of purchase price if equipment is purchased.

A. & A. MACHINERY CORP.
1267 Flushing Ave. Brooklyn, N. Y.



"Well satisfied..."

Recently an owner of a portable 'Budgit' Electric Hoist wrote us:

"We are well satisfied with our 'Budgit'! We moved over 1,800,000 lbs. of newsprint last year without any trouble."

Five words stand out in these two sentences. "Well satisfied" and "without any trouble." We guarantee satisfaction to every owner and user of this fast, easy-action hoist in the way it lifts loads. The time and money it saves to increase production and cut operating costs. The way it safeguards workers to cut compensation costs. And, we guarantee it will give long years of satisfactory service without any trouble. We make 'Budgit' Hoist that way!

Write us for more detailed information on the 'Budgit' Electric Hoist or call our nearest distributor for a demonstration of a 'Budgit' at work.

Available for all standard electric currents in a wide variety of speeds. Capacities: 250, 500, 1000, 2000, and 4000 lbs. Prices start at $119. Write for Bulletin No. 391.

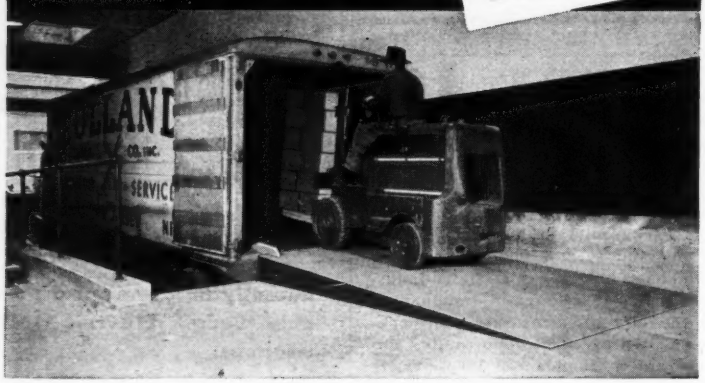
MAXWELL MANNING & MOORE INC. TRADE MARK

'BUDGIT' *Hoists*

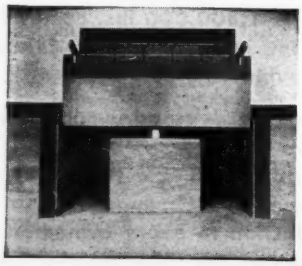
MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of 'Shaw-Box' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' Industrial and 'Microsen' Electrical Instruments.

IT'S THE NEW
LEVA-DOCK*
Adjustable Ramp For Loading Docks



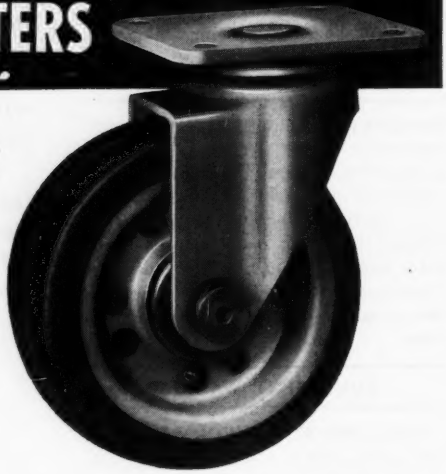
New hydraulic device keeps dock lined up with truck bed level



The Leva-Dock moves up and down with varying truck bed levels—permits fork lift trucks or other vehicles carrying heavy loads to move directly into trucks or trailers. Users say there's nothing like it. Backed by Rotary's experience on 45,000 hydraulic lifts. Write for Catalog.

ROTARY LIFT CO.
1140 Kentucky, Memphis 1, Tenn.
*Reg. U. S. Pat. Off.

One of 1458 LOAD-FLOATING WORK-SAVING Colson CASTERS



To meet every need exactly, there are 1458 different standard designs of Colson casters—many of them continuously stocked for immediate shipment. Long notable for quality that has made them the replacement choice of industry, they offer you big dividends in faster handling, easier work and reduced floor damage. It pays you to get the facts—write today for free 68 page catalog.

Model No. 3-527-65 swivel fork caster, ideal for use on medium weight industrial equipment. Double row of ball-bearings in hardened raceways; heavy oversize king bolt, patented lock nut. Built for years of rugged service.

THE COLSON CORPORATION
ELYRIA, OHIO
CASTERS • • LIFT JACK SYSTEMS • • INDUSTRIAL TRUCKS

INSTITUTE NEWS . . .
(Continued from page 67)

C. Brady, director of research for the Institute. His subject was "How to Find the Hidden Costs of Materials Handling." A question and answer period followed.

THE Society of Industrial Packaging and Material Handling Engineers in cooperation with the University of Southern California will sponsor a Packaging and Material Handling Institute on the college campus June 12-15. Further information may be obtained from Bruce Long, secretary, SIPMHE, 20 So. Los Angeles St., Los Angeles 12, Cal.

THE first regular dinner meeting of the New York Chapter of the AMHS was held at the Building Trades Employer's Association Club, New York City, March 30. Harry C. Bischoff, American Can Co., was chairman. Thomas J. McLernon, Lehigh Valley Railroad Co., was guest speaker. His subject covered problems associated with covered and open storage of materials on barges, piers and other freight terminal points.

W. W. PHILLIPS, Eli Lilly & Co., Indianapolis, addressed the April meeting of the Niagara Frontier Chapter (Buffalo), of the American Material Handling Society, Inc. His topic was "Space Utilization and Control." The talk was illustrated with slides. Members and guests were given an outline and diagram of the subject.

THE March meeting of the Materials Handling Society of Western Michigan (Grand Rapids and Muskegon) was highlighted by a talk by W. B. McClelland of the Clark Equipment Co. He spoke on "Some Problems of Management in Material Handling." Approximately 40 members and guests were present. The Society's meetings are held on the fourth Tuesday of the month in the auditorium of the Grand Rapids Public Museum.

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For the best in hardwood pallets at lowest prices consistent with quality and workmanship, order RAZORBACK Brand Pallets. They will prove their worth in service with long life and low maintenance cost. Write us for full details.

Arkansas Pallet Corp.

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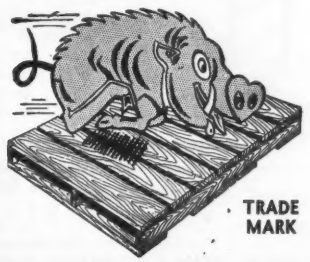

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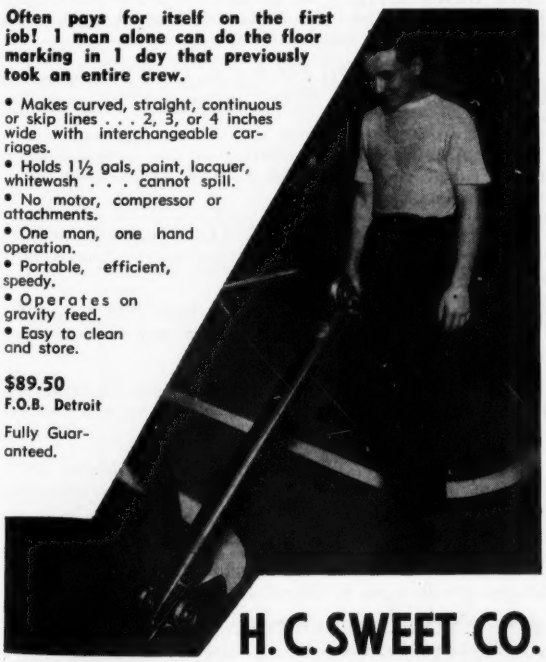
THE FLORLINE MARKING MACHINE

Makes Safety & Parking Lines At Walking Speed!

Often pays for itself on the first job! 1 man alone can do the floor marking in 1 day that previously took an entire crew.



- Makes curved, straight, continuous or skip lines . . . 2, 3, or 4 inches wide with interchangeable carriages.
- Holds 1½ gals, paint, lacquer, whitewash . . . cannot spill.
- No motor, compressor or attachments.
- One man, one hand operation.
- Portable, efficient, speedy.
- Operates on gravity feed.
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Fully Guaranteed.

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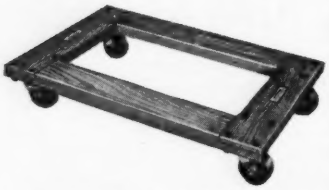
ELECTROLIFT *speeds production*

because you can move materials much quicker. Easy one-man operation handles loads up to 6 tons . . . frees manpower for other assignments. This worm-drive electric hoist performs quietly and economically. Savings accumulated with an ElectroLift will more than pay for its installation. Complete details on the model that suits your capacity, speed and plant layout needs will be supplied by your nearby ElectroLift representative, listed in the classified telephone directory. Or write direct to:

ELECTROLIFT, INC.
30 Church Street, New York 7, N. Y.

DOLLIES & TRUCKS



● A general purpose dolly with open frame and flush top. Light and easy to carry yet capable of handling heavy loads. Equipped with four swivel casters having 3" semi-steel or rubber tired wheels.

★ Ironbound material handling representatives are located in all important cities. These men can help you with all handling problems involving the use of standard Skids, Semi-Live Skids, Floor Trucks, Roll Handling Trucks, Dollies or specially designed adaptations to meet particular requirements.

IRONBOUND

FLO TRUK

● Popular as an all-purpose general merchandise unit. Ruggedly constructed — selected hardwood deck. Equipped with rubber tired or semi-steel wheels.

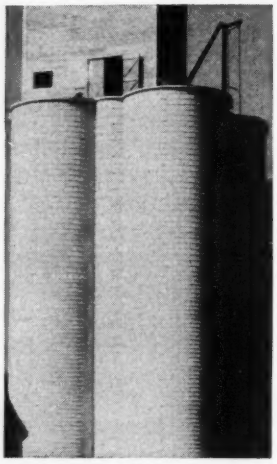
Ask for Catalog GP-7

Ironbound

IRONBOUND
BOX & LUMBER COMPANY
Materials Handling Division
30 HOFFMAN PLACE • HILLSIDE, N. J.

SKIDS • SEMI-LIVE SKIDS • DOLLIES • FLOOR TRUCKS

THE DECISION OF A LIFETIME



It is literally true that the decision to install Neff & Fry Storage Bins is a lifetime decision, for these Super-Concrete Stave structures can be expected to last beyond the ruling generation.

Many of the N & F Bins erected 30 years ago are now serving the sons of the purchasers. This longevity is due to the endurance of the Super-Concrete Staves. The staves are formed under hydraulic pressure, giving them rocklike density and high compressive strength. They do not rust, rot or burn. They form walls so rugged that heavy machinery is mounted upon them without additional supports. N & F Bins have often withstood tornadoes which destroyed adjacent buildings and uprooted nearby trees.

If you have flowable bulk materials to handle and store, get all the facts about N & F Bins. Our catalog, containing numerous photographs of installations, is yours for the asking.

The NEFF & FRY Company
151 East Central Avenue, Camden, Ohio

NEFF & FRY STORAGE BINS

Literature Available From Advertisers In This Issue

(Check corresponding numbers on the enclosed card for the free literature listed below).

A-1. IRONBOUND BOX & LUMBER CO. Catalogs illustrate and describe the company's line of skids, semi-skids, dollies and floor trucks.

A-2. BOND FOUNDRY & MACHINE CO. is offering catalog K-38 which covers its line of stationary and swivel casters. Use the postcard in this issue.

A-3. ARKANSAS PALLET CORP. will send information on its hardwood pallets. Circle No. A-3 on the enclosed postcard and mail.

A-4. ROWE METHODS, INC. Publications report on hydraulic dock ramps which sustain loads up to 400 lb. per sq. ft.

A-5. NUTTING TRUCK & CASTER CO. is offering Bulletin 49-G on its two-wheel, shelf, trailer, stake and racks trucks and casters and wheels.

A-6. DETROIT HOIST & MACHINE CO. Bulletins on electric hoists and light overhead cranes. Mail the enclosed postcard.

A-7. MAGNESIUM CO. OF AMERICA. will send information on its line of magnesium dockboards. Circle A-7 on the enclosed postcard.

A-8. THE AMERICAN PULLEY CO. Mail the postcard bound into this issue for data on the company's complete line of two-wheel hand trucks.

A-9. GENERAL BOX CO. Publications contain data on wirebound crates, nailed boxes, corrugated boxes, cleated corrugated containers, pallet boxes.

A-10. EUCLID CRANE & HOIST CO. is offering information on its line of overhead bridge cranes and semi-gantry cranes.

A-11. THOMAS A. EDISON, INC. will send data on nickel-iron-alkaline batteries. Circle No. A-11 on the postcard bound into this issue.

A-12. ORANGEVILLE MFG. CO. For further information on the company's line of two and four-wheel trucks and wheels, mail the postcard.

A-13. MERCURY MFG. CO. Bulletin 195-3 gives operating and construction features of the company's 2000-lb. capacity fork trucks.

A-14. LAMSON CORP. is offering detailed information on its line of conveyors. Circle No. A-14 on the postcard bound into this issue.

A-15. YALE & TOWNE MFG. CO. Information will be sent on the company's fork trucks, walkie-type trucks, hoist hand trucks and scales.

A-16. A. B. FARQUHAR CO. will send data on its line of conveyors designed for handling bulk and packaged materials.

A-17. BAKER-RAULANG CO. For additional data on low-lift, high-lift fork and ram trucks, crane trucks, tractors and platform trucks, mail the postcard.

A-18. UNITED STATES RUBBER CO. is offering information on its tote boxes, said to be odorless, waterproof and non-conductive; available in 18 standard sizes.

A-19. WESTINGHOUSE ELECTRIC CORP. Publication DB-19-040 describes fully its Rectox Dual-purpose Truck Chargers for all types of batteries.

A-20. HARNISCHFEGER CORP. A bulletin gives operating and construction features on electric hoists with capacities up to 15 tons.

Dependable
MATERIALS HANDLING EQUIPMENT

SAVES $4.80 a load at CHICAGO TRANSIT AUTHORITY SHOPS

Replacement material consigned to the twelve outside car houses is shipped in Streator Dependable Toteboxes to protect it from damage in transit. Another application is storage of replacement parts. For instance, 48 axle bearings are stored in each totebox. When called for by the machine shop, the entire totebox is transported for convenience and savings in handling costs.

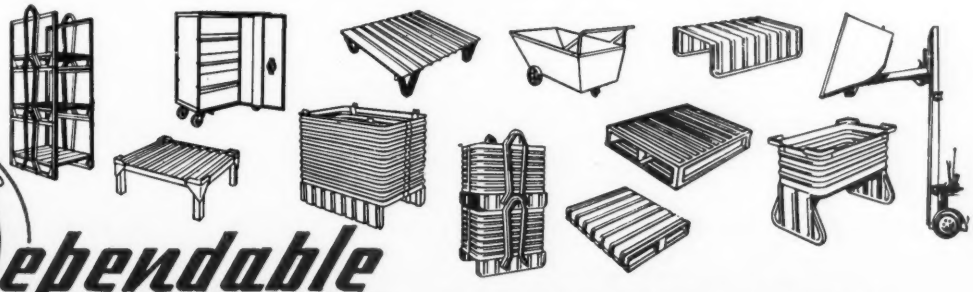
"Scrap, miscellaneous parts and bulk material are collected and stored in Streator Dependable Toteboxes at our major shops . . . and moved from place to place by fork lift. Labor cost in loading a truck by hand with scrap was formerly $4.80. Now a 5-yard truck is loaded in 20 minutes at a labor cost of approximately 50c."

J. T. BURKE
Supervisor of Utilities

At the Chicago Transit Authority shops, streetcars, busses, elevated cars and trolley busses are repaired and renewed. Streator Dependable toteboxes are used for storage of all kinds, principally materials and repair parts. They are also employed to transport materials, parts, scraps, cinders, turnings and borings from lathes, etc.

What Streator Dependable Materials Handling Equipment is going to help lower operating costs at the Chicago Transit Authority Shops . . . it can also do for you. For your more difficult material handling problems, our experienced Sales Engineers will gladly offer their recommendations. No obligation, of course. WRITE for complete information catalog.

Streator Dependable CORRUGATED Products
For Added Strength—Less Weight—Lower Cost



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MANUFACTURING CO.
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Some territories still open for distributors and sales agents. Write, giving territory covered.

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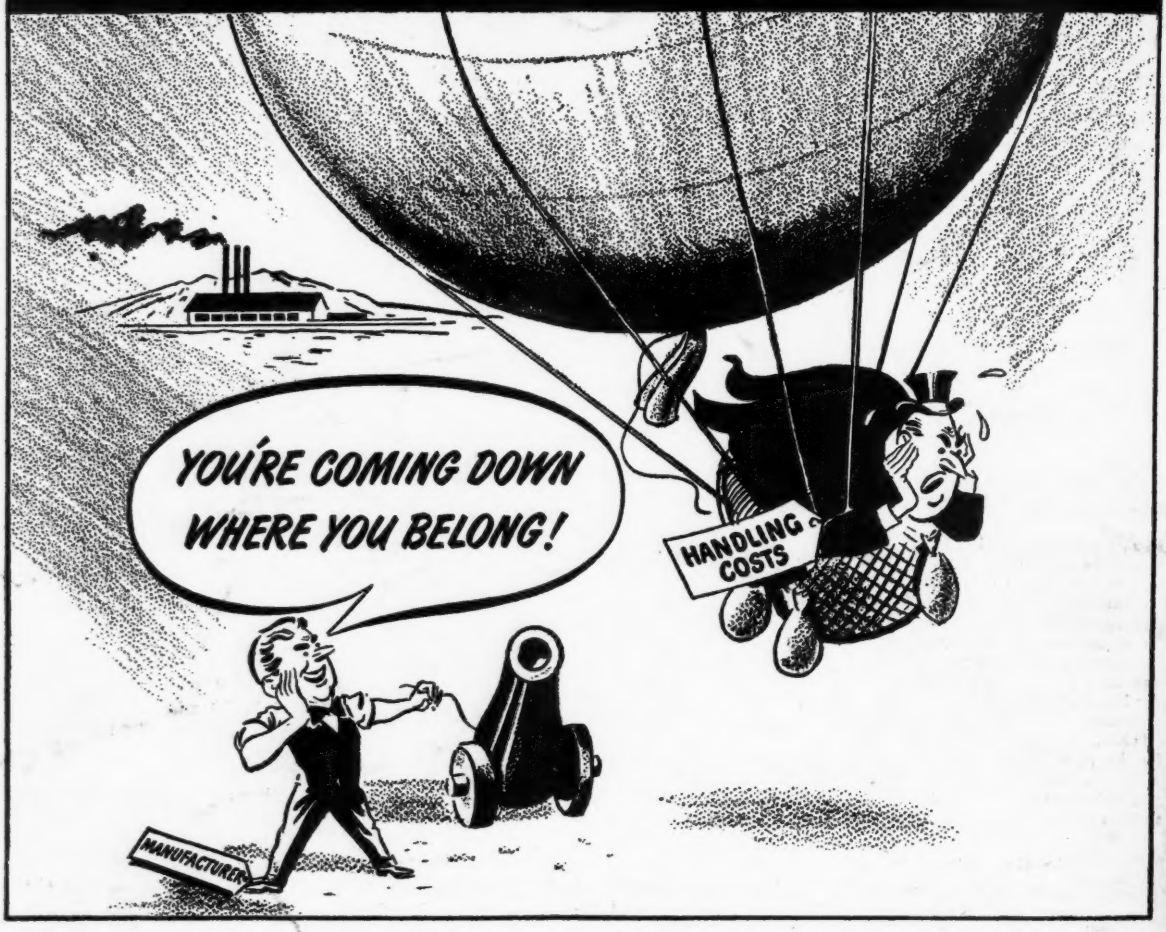
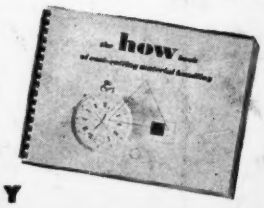


Now that management is attacking the high cost problem with vision and vigor, startling savings are beginning to appear. Most outstanding are the economies due to improvements in material handling techniques. For example, in one operation alone, a metal awning company increased efficiency 100% by using Yale Hoists. In the automotive field, a manufacturer adopted fork trucks and a unit system for loading springs: Result: 92% hacked off loading time.

These examples make it clear that choosing the right system and equipment is of first importance.

Your plant has its own particular handling problems. How much you can save depends on *how* you solve them. To give you practical help, Yale has prepared *The HOW Book of Cost-Cutting Material Handling.* This brochure does more than picture different kinds of material handling machinery in use. It shows you *how* to analyze your handling routine and select equipment that will save the most. Write for your copy.



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